

# STATE ROUTE 78 CORRIDOR STUDY

MAY 2012



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## EXECUTIVE SUMMARY

The State Route (SR) 78 Corridor Study conceptually examined the feasibility of adding either a Managed or a Tolled Lane in each direction to SR 78, between Interstate 5 (I-5) and I-15, in order to address regional and local travel demand within the corridor. The study evaluated preliminary right-of-way needs and environmental constraints as well as the potential for improvements to address corridor mobility issues. In addition, the study estimated toll revenues as a potential means for project financing and evaluated preliminary implementation strategies. SANDAG pursued this work through a Caltrans Planning Partnership Grant with the grant match provided by the City of San Marcos. The development of the study utilized a Technical Working Group (TWG) to incorporate input from key stakeholders, including the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, County of San Diego, California Department of Transportation (Caltrans), North County Transit District (NCTD), San Diego Association of Governments (SANDAG), and other major corridor stakeholders.

SR 78 is located in the North County region of San Diego County and traverses the Cities of Oceanside, Carlsbad, Vista, San Marcos, and Escondido, as well as unincorporated areas of San Diego County. SR 78 is the primary east-west freeway connection in North County and is the primary facilitator of local and regional travel, with few parallel alternative roadways. It also provides north-south connections to Interstates 5 and 15.

Along the SR 78 Corridor, there has been considerable growth in population, employment and retail activities over the past 15 years which has resulted in increased congestion on SR 78 and these trends are expected to continue in the future. In addition, there are a number of other major travel generators along the corridor, such as universities, hospitals, local and regional shopping, and recreational activities. This growth has led to increasing delays in the corridor including the San Diego region's worst bottleneck at Barham Drive in San Marcos for the past three years.

In October 2011, SANDAG adopted the 2050 Regional Transportation Plan (RTP), which includes the addition of two Managed Lanes on SR 78 (one eastbound and one westbound) built by 2020, the I-15/SR 78 High Occupancy Vehicle (HOV) connector built by the year 2020, and the I-5/SR 78 HOV and freeway connectors built by 2035. Because the project performed well under the 2050 RTP performance evaluation criteria, the planned delivery of the SR 78 Project was advanced compared to the previous RTP (SANDAG, 2011).

Based on the adopted 2050 RTP, the study area focused on the SR 78 facility between I-5 and I-15. The study analyzed two build alternatives which both included the addition of one eastbound and one westbound lane to SR 78, auxiliary lane improvements, and transit and connector projects consistent with the 2050 RTP. In one alternative, the new lanes were analyzed as Managed Lanes as per the 2050 RTP, where carpools and transit would access the lane for free. Solo drivers could access the lanes by paying a toll. In the other alternative, the new lanes were analyzed as Tolled Lanes where all

drivers would pay for access. The Managed and Tolloed Lanes alternatives would have nearly the same physical improvements with the main difference being which vehicle types would be required to pay a toll for lane access. These alternatives were evaluated against two no build alternatives. One no build alternative included only those projects included in the 2010 SANDAG RTIP. The other included projects in the 2050 SANDAG RTP with the exception of the SR 78 widening and connectors to I-5 and I-15.

Using data from the SANDAG regional travel demand model, an econometric model that facilitates rapid simulation of toll policy and network alternatives, provided projected traffic conditions on the Managed, Tolloed, and General Purpose (GP) Lanes under different pricing strategies. The alternative operating objectives or pricing strategies provide bookends for the range of strategies that could be implemented. The objectives were:

- Toll Revenue Maximization – this scenario has a goal of maximizing the revenue produced by the Managed or Tolloed Lanes facility.
- Mobility Optimization – the goal of this scenario is to minimize aggregate travel time cost for all users across both the GP and Managed or Tolloed Lanes.

These differences in operating objectives resulted in significant differences in how the corridor would perform, as discussed in Section 3.0 – Traffic Analysis.

The study included a conceptual engineering review to define an initial project footprint, initial design exceptions, potential right-of-way impacts, and a high-level cost estimate. The project footprint was developed by applying the standard Caltrans freeway cross section to the length of the project. Interchange configurations were not designed at this project phase and therefore are not included in the project footprint. Where there would be substantial impacts to existing structures and facilities, key design exemptions from the Caltrans Highway Design Manual (HDM) (Caltrans, 2011) were identified and included in the project footprint. Once this footprint was established, potential adjustments to the existing centerline were evaluated in order to reduce right-of-way and environmental impacts. A preliminary rough order of magnitude capital cost estimate was developed for the project based on the engineering review. Based on the preliminary analysis, the project is estimated to cost between \$917 and \$1,109 million (in 2011 dollars). The study also reviewed potential environmental constraints and identified potential anticipated environmental approvals, technical studies, and permits that may be needed for the project.

Screening criteria consistent with the 2050 RTP were developed with the TWG. Using the results of the traffic analysis, engineering review, and environmental analysis, the TWG evaluated the alternatives against these screening criteria. The screening criteria included the following:

- Travel Times
- Arterial Level of Service
- Safety
- Improvement to Transit and HOV Mobility
- Study Area Mode Shares

- Percent of SR 78 Congested
- Estimated Right-of-Way Needed
- Potential Impact on Sensitive Environments
- Person Hours Saved
- Cost-Effectiveness

The Managed and Tolloed Lanes alternatives were evaluated against each other by comparing their performance to the no build alternatives. Based on this screening criteria analysis, the Managed Lanes alternative under the Mobility Optimization scenario performed the best. However, the differences in performance among the alternatives were not substantial; thus pricing for a future facility could fall between the Mobility Optimization and Revenue Maximization strategies.

The same toll modeling that was used for the traffic analysis was used to better understand potential revenues that could be generated through the implementation of Tolloed Lanes. If toll revenues were significant, they could be part of a potential project capital funding strategy in the case that anticipated federal and state construction funds were not available. Revenues were forecasted based on modeled corridor volumes and tolls with deductions taken based on anticipated corridor operations and maintenance costs. However, only the Revenue Maximization objective with a higher value of time assumption resulted in a potential funding contribution from Tolloed Lane revenues and in that case the capital contribution would be marginal.

The SR 78 Corridor Study is an initial step in implementing the SR 78 Corridor Project. The project development process contains many phases which will follow the completion of this study. These stages will expand upon the conceptual engineering and impact analysis done for this study. As part of this process, methods for project delivery and potential project phasing will be considered. Potential project delivery methods include the traditional Design-Bid-Build, Design-Build, Construction Management/General Contracting, and Design Sequencing. Project phasing could provide many benefits and could be phased either by segment or by type of improvement. It is possible that project phasing would occur from east to west to allow for connection to the I-15 Express Lanes and planned connector facility.

As part of the Corridor Study efforts, SANDAG led public outreach efforts in order to gather input about how corridor development should be framed. This included two open house style public meetings, presentations to a variety of stakeholder groups, and a public comment period. A range of comments were received containing a mix of support and opposition to the proposed project alternative concepts.

Based on the analysis of the alternatives and the alternatives screening, the Managed Lanes alternative is favored. Financial analysis indicated that the Tolloed Lane alternative is unlikely to provide sufficient revenues to close a capital funding gap. Additionally, public input in general was not supportive of Tolloed Lanes. Therefore, it is recommended that plans for the corridor remain consistent with the 2050 RTP and that one Managed Lane in each direction be implemented along with planned auxiliary lanes and transit enhancements.

## 1.0 PURPOSE AND BACKGROUND

### 1.1 Purpose and Introduction

The State Route (SR) 78 Corridor Study conceptually examined the feasibility of adding either a Managed or a Tolled Lane in each direction to SR 78, between Interstate 5 (I-5) and I-15, in order to address regional and local travel demand within the corridor. The study involved representatives of the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, County of San Diego, California Department of Transportation (Caltrans), North County Transit District (NCTD), San Diego Association of Governments (SANDAG), and other key stakeholders through a Technical Working Group (TWG) which provided input throughout the development of the study. A complete list of Technical Working Group participants is included on the acknowledgements page of this document.

In this report, the background and impetus for the project are discussed in this section, Purpose and Background. The rest of the report includes the following information:

- Section 2.0 - Definition of Alternatives, provides details on the build and no build alternatives analyzed. Based on the definition of alternatives, several analyses were conducted to evaluate the alternatives' performance.
- Section 3.0 - Traffic Analysis, discusses the methodology used to estimate traffic impacts for the defined alternatives and forecasts revenue for the build alternatives.
- Section 4.0 - Engineering Feasibility, discusses the methodology used to estimate the high-level project footprint, right-of-way and environmental impacts, and to identify design exceptions.
- Section 5.0 - Planning Level Capital Cost Estimate, details the estimated capital, operations, and maintenance costs for the build alternatives based on the engineering review.
- Section 6.0 - Environmental Constraints, discusses potential environmental impacts and identifies the likely required environmental studies and permits.
- Section 7.0 - Alternatives Evaluation, synthesizes the results of the various traffic, financial, engineering, and environmental analyses and evaluates the alternatives using screening criteria developed by the TWG.
- Section 8.0 - Financial Feasibility analyzes the financial feasibility of the alternatives, detailing the methodology, assumptions, and results of the analysis.
- Section 9.0 - Implementation, discusses the project development process and potential project delivery methods and phasing strategies.
- Section 10.0 - Public Outreach, describes the public outreach efforts that were undertaken and comments that were gathered.
- Section 11.0 – Conclusion recommends an alternative for further study.



## 1.2 Background and Problem Statement

The SR 78 Corridor is located in the North County region of San Diego County and traverses the Cities of Oceanside, Carlsbad, Vista, San Marcos, and Escondido, as well as unincorporated areas of San Diego County. SR 78 is the only east-west freeway connection in North County and is a regionally significant transportation facility, with few alternative parallel roadways.

The SR 78 Corridor serves as the primary facility for local and regional east-west travel in North County. The study area is approximately 17 miles in length, and the SR 78 roadway is generally comprised of three traffic lanes in each direction, with auxiliary lanes at certain locations to facilitate traffic entering and exiting at interchanges. The corridor serves interregional travel among the Counties of Riverside, Orange, and San Diego. In San Diego County, the corridor facilitates trips to and from multiple East County destinations as well as providing an essential east-west link for those traveling through the corridor. In addition, the highway accommodates shorter, more local trips that would typically be served by a network of arterial streets. However, there are few other continuous, east-west roadways within the corridor, particularly in the east end of the corridor.

### 1.2.1 History of SR 78 Corridor Study

In 2009, SANDAG was awarded a Caltrans Planning Partnership Grant to fund the examination of the feasibility of toll and other non-toll alternatives to address future regional and local travel demand within this regionally significant corridor, with the grant match provided by the City of San Marcos. Because of changes in the region's transportation investment priorities, the approach of the SR 78 Corridor Study has evolved over the course of the study. The SANDAG 2030 Regional Transportation Plan (RTP) included two High-Occupancy Vehicle (HOV) lanes on SR 78 with connections to I-15 and I-5 to be built by 2030 in its Reasonably Expected Revenue Scenario (SANDAG, 2007). HOV lanes, also known as carpool lanes, require vehicles to carry a minimum number of people, which is usually two people, but in some cases three people. Initially, three study alternatives were identified: an HOV lane alternative as defined in the 2030 RTP; a Managed Lanes alternative; and a Transportation Demand and System Management alternative that would include auxiliary lanes, ramp improvements, and additional transit service. Managed Lanes, also known as Express Lanes, allow high-occupancy vehicles to travel for free and allow solo drivers to pay to use the lanes. One of the goals of the study was to consider how implementation of congestion-reducing corridor improvements could be advanced before 2030, potentially through alternative revenue sources.

The SANDAG 2050 RTP used evaluation criteria, such as mobility, congestion relief, number of person trips within one mile, and job accessibility, to evaluate and rank projects. Because SR 78 scored well on these particular criteria, the planned delivery of the SR 78 project was moved forward in the SANDAG 2050 RTP which was adopted in October 2011. The 2050 RTP includes two Managed Lanes (instead of HOV) on SR 78 to be built by 2020 as part of a larger planned network of Managed Lanes. The 2050

RTP also includes an I-15/SR 78 HOV connector built by the year 2020 and I-5/SR 78 HOV and freeway connectors built by 2035. As a result, the focus of this study shifted to include evaluating the revenue capacity of alternatives more closely aligned with the 2050 RTP. Instead of evaluating three alternatives, the analysis focused on evaluating a Managed Lanes alternative and a Tolloed Lanes alternative against two baseline scenarios, which is discussed further in Section 2.0 - Definition of Alternatives.

### 1.2.2 Existing and Forecasted Corridor Conditions

Congestion and delay currently occur on portions of SR 78 during the peak periods and are expected to worsen as additional users utilize the corridor in the future. In 2011, average daily corridor traffic ranged from 124,000 at the western end near I-5 to 162,000 at the eastern approach toward I-15 (Caltrans Performance Measurement System (PeMS), 2012). By 2050, the average daily traffic is projected to grow approximately 35 percent to 168,000 near I-5 and approximately 10 percent to 178,000 near I-15 (SANDAG, 2011).

It is predicted that the future level of service will only worsen as pronounced and sustained congestion is projected for a greater duration throughout the corridor. Local jurisdictions along the corridor have experienced robust population and employment growth over the past decade. In particular, the City of San Marcos experienced greater than 50 percent growth in population from 54,977 residents in 2000 to 83,781 residents in 2010 (U.S. Census Bureau, 2000; U.S. Census Bureau, 2010), which has increased average daily traffic (ADT) in the project area. The cities and unincorporated County within the SR 78 Corridor are projected to experience continued growth in population, employment, housing, retail, and commercial activities through the 2050 RTP horizon year.

The existing peak hour level of service (LOS) ranges throughout the corridor from LOS A to LOS F. The LOS is generally worse towards the eastern and western ends of the study corridor. In the western end of the corridor, the LOS was generally unacceptable (LOS E or F) in the eastbound and westbound directions during the PM peak. In the eastern end of the corridor, both eastbound and westbound travelers experienced either LOS E or F in the AM and PM peak hours (Caltrans PeMS, 2012).

Operations in the eastern end of the SR 78 corridor are more congested during both the morning and evening peak periods. Vehicles headed in the eastbound direction in the PM peak period (3 to 6 PM), from roughly Rancho Santa Fe Road to the I-15, regularly experience reduced travel speeds and congested traffic conditions. In 2011, SR 78 eastbound travel at Barham Drive had an average daily vehicle hours of delay of 1,449 hours during the afternoon peak period on weekdays (Caltrans PeMS, 2012), making it the worst bottleneck in San Diego County for the past three years.

The westbound direction of SR 78 in San Marcos experiences more congestion approaching the Nordahl Road interchange, with traffic backing up on both the northbound I-15 flyover ramp and the southbound I-15 exit ramp to westbound SR 78, resulting in traffic queues on I-15 (Caltrans, 2010). Westbound auxiliary lanes from I-15 to Nordahl were completed in January 2012 and improvements to the Nordahl Bridge

interchange are currently under construction. These projects will begin to address current capacity constraints. Anecdotally, it has been noted that the northbound I-15 to westbound SR 78 flyover ramp traffic regularly backs up to Ninth Avenue (or about 1 mile) on I-15, causing congestion. In addition to the difficult merge conditions, westbound SR 78 in San Marcos regularly experiences highly congested traffic conditions in the peak morning hours between I-15 and Twin Oaks Valley Road to the west.

The west end of the corridor experiences congestion at the I-5 interchange, particularly for the westbound SR 78 to southbound I-5 movement that is controlled by a traffic signal. The westbound traffic queues onto the SR 78 freeway lanes as it approaches the I-5 interchange. While the west end of the corridor experiences congestion related to the interchange with I-5, it is not as extensive as congestion found in the San Marcos and Escondido area of the corridor. The west end of the corridor has relatively continuous east-west arterial streets both north and south of SR 78, which provide a broader roadway network and alternative route options for short trip drivers.

### 1.2.3 Existing Physical Characteristics

The project area is represented by suburban characteristics, but it also contains existing and planned Smart Growth place types. Residential land uses include single- and multi-family units, as well as mobile home parks and group quarters facilities such as student housing. The corridor contains a variety of employment and activity centers including shopping centers, retail/commercial, hotels/motels, low-rise office, healthcare, education, government, and industrial, which are directly adjacent to the SR 78 Corridor. California State University, San Marcos (CSUSM) and Palomar College are major educational institutions situated directly adjacent to SR 78. The SPRINTER rail line offers public transit services parallel to SR 78 with seven-day service and a 53-minute ride between Escondido and Oceanside. Supporting the SPRINTER and providing local distribution to and from stations are two local bus routes (305 and 318) which parallel the rail line, north-south local bus routes serving various stations, and shuttle routes linking colleges to the closest SPRINTER Station. Currently there are no bus routes traveling on SR 78.

The topography and geographic characteristics within the project area influence the feasibility of potential alternatives. The SR 78 Corridor runs through canyons and various elevations yielding significant slopes and a constrained right-of-way. Parcels adjacent to the freeway have been developed and frontage roads run parallel to SR 78 for much of its length. As a result, future transportation development of the SR 78 facility is limited. Due to the constrained right-of-way and topography, improvements to SR 78 are challenging and costly. However, both the public and local jurisdictions have expressed concerns over existing and future congestion within the corridor.

### 1.2.4 Other Corridor Projects

While the SR 78 Corridor Study examines the potential for adding Managed or Tolloed Lanes to SR 78, other projects are currently underway in the corridor to improve mobility.

As an interim step towards full double tracking, NCTD is currently identifying the additional double tracked segments of the SPRINTER line necessary to permit a 20-minute service frequency prior to 2020. The NCTD Mobility Plan which comprehensively restructured the bus network is implementing shuttles linking California State University, San Marcos; Palomar College; and MiraCosta College to SPRINTER stations.

Caltrans, SANDAG, and the cities of San Marcos and Escondido have partnered to implement improvements in the vicinity of Nordahl Road. In January 2012, a new westbound auxiliary lane from I-15 to Nordahl Road opened. Construction began around the same time to add auxiliary lanes to eastbound SR 78 – one lane between Woodland Parkway and Barham Drive and two lanes between Barham Drive and Nordahl Road. This work is anticipated to be completed in early 2013. Replacement of the Nordahl Road Bridge also is currently underway with completion scheduled for fall 2012. The new bridge will include dedicated turn lanes and reconfigured ramps and will be lengthened to accommodate future SR 78 widening.

The City of San Marcos is working on other improvements to the SR 78 Corridor within their jurisdiction. Permitting and mitigation for the future widening of SR 78 between San Marcos Boulevard and Twin Oaks Valley Road are currently being pursued. This work includes the addition of Managed or Tolled Lanes, modification of existing ramps, and a new bridge at San Marcos Creek. Preliminary design is complete and environmental permits for this work are scheduled to be issued in fall 2012. Design of a new Woodland Parkway interchange has progressed to 60% and the environmental permitting has been completed. The new interchange will include ramp modifications and bridge lengthening to accommodate a wider SR 78 footprint.

The City of Vista is in the environmental clearance and design stages to widen West Vista Way from its current substandard design to a 4-lane road in accordance with the City's adopted Circulation Element. West Vista Way is a major arterial and SR 78 frontage road. At this point, the City is proceeding only with preliminary engineering, final design and environmental documentation of the project in part due to uncertainty with the design of the adjacent SR 78 Corridor. The City has programmed local funds to construct the first phase of the project between Emerald Drive and Grapevine Road.

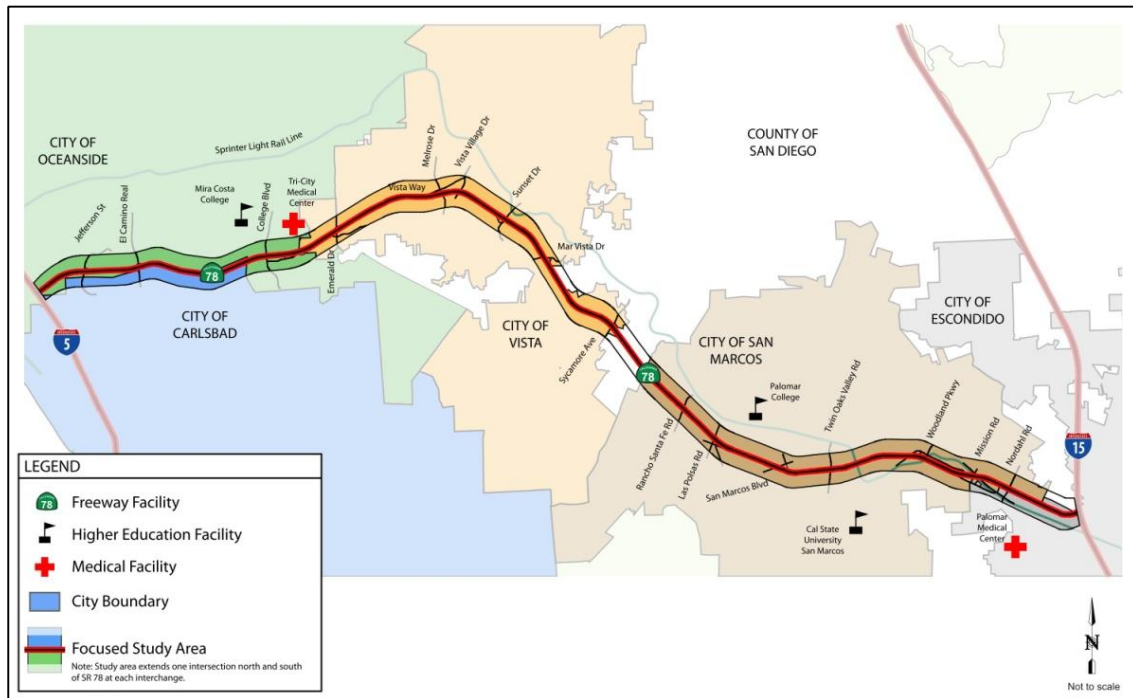
As part of ongoing work to design and permit the Interstate 5 North Coast Corridor project, Caltrans is developing alternatives for the I-5 and SR 78 connectors. A Project Study Report is in progress and will be available for review by corridor jurisdictions in the summer of 2012.

## 2.0 DEFINITION OF ALTERNATIVES

### 2.1 Study Area

The corridor study area focuses on the SR 78 facility between I-5 and I-15, extending one intersection north and south of SR 78 at each interchange (Figure 1). For modeling purposes, the study area includes Traffic Analysis Zones that are within or partially within a 2-mile buffer of the facility. This modeling study area was used to analyze the impacts of different alternatives on broader travel mode shares and arterial level of service.

**Figure 1: SR 78 Corridor Study Area**



### 2.2 Baseline and Build Alternatives

Based on the adopted 2050 RTP which includes Managed Lanes on SR 78, two build alternatives were developed and analyzed: one Managed Lane in each direction on SR 78 and one Tolloed Lane in each direction on SR 78. Corridor operational improvements were included with these build alternatives. Additionally, two baseline alternatives were developed to analyze the impact of the build alternatives against a no build approach. All build and baseline alternatives were analyzed for the years 2020, 2035, and 2050. The details and phasing of each of the alternatives are described below, summarized in Table 4, and mapped in Appendix A.

#### **Baseline A - No Build and 2010 Regional Transportation Improvement Program**

Baseline A includes only those short-range projects already programmed in the SANDAG 2010 Regional Transportation Improvement Program (RTIP). Any other transportation improvements planned for the corridor are not included in Baseline A.

**Baseline B - 2050 RTP without SR 78**

Baseline B includes long-range regional investments from the SANDAG 2050 RTP, including operational improvements on SR 78, with the exception of the SR 78 Managed Lanes and connectors with I-5 or I-15. It also incorporates operational improvements on SR 78 identified by Caltrans between Nordahl Road and Twin Oaks Valley Road that are not included in the 2050 RTP. This alternative also includes corridor transportation improvements programmed in the 2050 RTP. These improvements include the following:

- SPRINTER Double Tracking – which would add an additional track to the currently single-tracked SPRINTER transit line and increase service
- SPRINTER Extension to South Escondido
- SPRINTER Express Service
- San Marcos Circulator Shuttles
- Oceanside to Vista Rapid Bus Route
- Downtown Escondido to East Escondido Rapid Bus Route

**Managed Lanes**

The Managed Lanes alternative would add one lane in each direction to SR 78. These lanes would be accessible to HOVs for free and to other vehicles for a fee. HOVs would be classified as those vehicles with two or more occupants in 2020 and 3 or more occupants after 2035. Tolling policies for the Managed Lanes are shown in Table 1. Further definition and examples of Managed/Express, Toll and HOV lanes are included in Appendix B.

The alternative includes all SANDAG 2050 RTP improvements and additional operational improvements on SR 78 between Nordahl Road and Twin Oaks Valley Road, as identified by Caltrans. Auxiliary Lane and interchange improvements included in the 2050 RTP are provided in Table 2.

Connector ramps between SR 78 and perpendicular highways would also be incorporated into this alternative. This would include connector ramps between the SR 78 Managed Lanes and the existing I-15 Express Lanes; between the GP lanes on SR 78 and I-5; and between the SR 78 Managed Lanes and the planned I-5 Express Lanes.

Transit enhancements, as defined in Baseline B, are included in the Managed Lanes alternative, as well as circulator services proposed as part of the SR 78 Corridor Study. These circulator services would include connecting services between SPRINTER Stations, Palomar College and California State University, San Marcos; between the SPRINTER Rancho Del Oro Station and MiraCosta College; and between East Escondido and San Marcos.

**Table 1: Toll Policies for Managed Lanes Alternative**

<b>Year</b>	<b>Vehicle Class</b>	<b>Access Policy</b>	<b>Toll Policy</b>
2020	SOV	Allowed	Tolled
	HOV2+	Allowed	Free
	Transit	Allowed	Free
	Truck	Not Allowed	N/A
2035, 2050	SOV	Allowed	Tolled
	HOV2	Allowed	Tolled
	HOV3+	Allowed	Free
	Transit	Allowed	Free
	Truck	Not Allowed	N/A

**Table 2: 2050 RTP SR 78 Auxiliary Lanes and Interchange Improvements**

<b>Name</b>	<b>Improvement</b>
<b>El Camino Real to Rancho Del Oro</b>	Eastbound Auxiliary Lane
<b>El Camino Real to Rancho Del Oro</b>	Westbound Auxiliary Lane
<b>Emerald Drive</b>	Westbound Auxiliary Lane before exit ramp to Emerald
<b>Las Posas Road to San Marcos Boulevard</b>	Eastbound Auxiliary Lane
<b>Las Posas Road to San Marcos Boulevard</b>	Westbound Auxiliary Lane
<b>Rancho Del Oro</b>	Four direction interchange, connect SR 78 with the northern section of Rancho Del Oro
<b>Rancho Del Oro</b>	Construct southern extension of Rancho Del Oro to Marron
<b>Sycamore Avenue</b>	Westbound Auxiliary Lane before exit ramp to Sycamore
<b>Twin Oaks Valley Road to Nordahl Drive</b>	Eastbound Auxiliary Lane
<b>Twin Oaks Valley Road to Nordahl Drive</b>	Westbound Auxiliary Lane

### **Tolled Lanes**

The Tolled Lanes alternative includes all of the physical improvements included in the Managed Lanes alternative. However, all vehicles, with the exception of transit service, using the new lanes would be required to pay a toll, including HOVs. The tolling policy is summarized in Table 3. Additionally, express bus service connecting Oceanside and Escondido via SR 78 utilizing the Tolled Lanes would be implemented in the 2020 phase only. This would provide a non-toll, enhanced mobility alternative in the corridor in the interim period before SPRINTER double tracking is completed and further enhances transit capacity in the corridor.

The Tolled Lanes alternative includes all SANDAG 2050 RTP improvements and additional operational improvements on SR 78 between Nordahl Road and Twin Oaks Valley Road, as identified by Caltrans and not included in the 2050 RTP. It also includes all transit enhancements identified in the Managed Lanes alternative.

**Table 3: Toll Policies for Tolloed Lanes Alternative**

Year	Vehicle Class	Access Policy	Toll Policy
2020	SOV	Allowed	Tolled
	HOV2+	Allowed	Tolled
	Transit	Allowed	Free
	Truck	Not Allowed	N/A
2035, 2050	SOV	Allowed	Tolled
	HOV2	Allowed	Tolled
	HOV3+	Allowed	Tolled
	Transit	Allowed	Free
	Truck	Not Allowed	N/A

## 2.3 Alternatives Evaluation Approach

To compare the alternatives, the traffic, engineering, and environmental analyses were conducted and evaluated against screening criteria (discussed further in Section 7.0 - Alternatives Evaluation of this document). The following screening criteria were developed by SANDAG and the SR 78 Corridor Study Technical Working Group (TWG) to evaluate the defined alternatives based on issues identified in the corridor and taking into account evaluation criteria used in the 2050 RTP:

- Travel Times
- Arterial Level of Service
- Safety
- Improvement to Transit and HOV Mobility
- Study Area Mode Shares
- Percent of SR 78 Congested
- Estimated Right-of-Way Needed
- Potential Impact on Sensitive Environments
- Person Hours Saved
- Cost-Effectiveness

The methodology and some high-level analysis for these performance criteria are discussed in the following sections: Section 3.0 - Traffic Analysis; 4.0 - Engineering Feasibility; 5.0 - Planning Level Capital Cost Estimate; and 6.0 - Environmental Constraints.



**Table 4: SR 78 Corridor Study Alternatives**

	Baseline A - No Build and 2010 RTIP			Baseline B – 2050 RTP without SR 78			Managed Lanes Alternative			Tolled Lanes Alternative		
	2020	2035	2050	2020	2035	2050	2020	2035	2050	2020	2035	2050
<b>SR 78 Enhancements</b>												
Managed Lanes*							X	X	X			
Tolled Lanes										X	X	X
Auxiliary Lanes	X	X	X	X	X	X	X	X	X	X	X	X
I-15/SR 78 Managed Lane Connectors*							X	X	X	X	X	X
I-5/SR 78 Freeway-to-Freeway Connectors*								X	X		X	X
I-5/SR 78 Managed Lane Connectors*								X	X		X	X
<b>Transit Enhancements</b>												
SPRINTER Double Tracking and Service *					X	X		X	X		X	X
SPRINTER Extension to South Escondido*					X	X		X	X		X	X
SPRINTER Express Service*					X	X		X	X		X	X
San Marcos Shuttles *					X	X		X	X		X	X
Oceanside to Vista Rapid Route*					X	X		X	X		X	X
Downtown Escondido to East Escondido Rapid*					X	X		X	X		X	X
Express Bus Service (Escondido to Oceanside)										X		
College Routes (1 and 2)							X	X	X	X	X	X
East Escondido to San Marcos Loop							X	X	X	X	X	X
<b>Other Enhancements</b>												
Transportation Demand Management *				X	X	X	X	X	X	X	X	X
Transportation System Management *				X	X	X	X	X	X	X	X	X

Note: Projects marked with a “\*” are included in the 2050 RTP. Auxiliary lane projects include both 2050 RTP auxiliary lane projects and additional Caltrans auxiliary lane projects. The exception is in Baseline A where auxiliary lanes are only the existing lanes or those included in the 2010 Regional Transportation Improvement Program (RTIP).

### 3.0 TRAFFIC ANALYSIS

In order to analyze the potential traffic benefits and impacts of the defined alternatives, SANDAG generated travel demand model runs for the two baseline and two build alternatives. These runs produced ADT and time of day period information for the study area roadways. These data were derived for three planning and phasing horizons: 2020, 2035 and 2050. Data generated from the models were analyzed and evaluated against screening criteria. For the baseline alternatives and the study area-wide measures, all travel data required for the screening criteria were developed from model outputs. Screening criteria based on traffic analysis data included corridor travel times, the percent of the corridor in congested conditions, person hours saved by alternatives, study area mode share, and arterial level of service (LOS). The results of the traffic analysis are discussed in detail in Section 7.0 - Alternatives Evaluation.

The two baseline traffic analyses were based on the SANDAG model's outputs, as all trips would utilize the GP lanes with no redistribution between lane types. For the build alternatives, SANDAG model results were post-processed using ECONorthwest's Rapid Toll Optimization Model (RapidTOM) tool to develop facility-specific measures. Build alternative, facility-specific measures based on RapidTOM results included travel times, percent of corridor in congested conditions, and person-hours saved. Study area-wide travel screening criteria that were not impacted by the redistribution of users on the SR 78 facility included both the study area mode share and the arterial level of service.

#### 3.1 Tolloed/Managed Lanes Methodology and RapidTOM

RapidTOM is an econometric model that facilitates rapid simulation of toll policy and network alternatives. It develops planning level feasibility measures using data on segment or corridor traffic volume, density and composition, and other variables. The model post-processed build alternative GP, Managed, and Tolloed Lanes traffic forecasts derived from the SANDAG model to determine potential traffic, toll, and revenue outcomes for the study's Managed and Tolloed Lanes alternatives. Traffic volume outputs from the SANDAG model were reallocated across the GP and Managed or Tolloed Lanes based on dynamic pricing of the Managed and Tolloed Lanes. Dynamic pricing of the Managed and Tolloed Lanes is a condition not included in the SANDAG model, which has fixed toll rates for AM peak (6 a.m. to 9 a.m.), PM peak (3 p.m. to 6 p.m.) and off-peak times.

Changes in distribution between the lanes by the dynamic pricing model (i.e., more vehicles in the GP lanes, fewer in the Managed Lanes or more vehicles in the Managed Lanes, fewer in the GP lanes) impacted the mobility performance of the build alternatives (Managed or Tolloed Lanes). Therefore, all build alternative quantitative transportation screening criteria that were specific to the SR 78 facility were based on the RapidTOM outputs. Traffic data developed in the RapidTOM model were used to evaluate alternative mobility performance, as discussed in Section 7.0 - Alternatives Evaluation. By using this data, the transportation screening criteria for the Managed and Tolloed Lanes alternatives were consistent with the revenue projections that form the basis for the financial feasibility analysis addressed in Section 8.0 of this document.

The toll optimization process begins by constructing a representation of the corridor in the Toll Optimization Model (TOM) system, the broader model of which RapidTOM is a version. It is developed from information on facility characteristics (e.g., volume delay relationships, number

of lanes, access and egress features). The TOM process is “seeded” by vehicle volumes obtained from regional model runs. The seed data are usually, but not always, obtained from an HOV run of the regional model. The vehicle volumes are provided by vehicle class and by the time of day of travel for the model years of interest.

In the SR 78 case, seed data were not provided from HOV runs, but rather from the modeling of Managed Lanes and Tolloed Lanes alternatives in the regional model. Time of day information was limited to a three-hour AM peak and a three-hour PM peak, and off-peak periods for the model years 2020, 2035, and 2050. For model year 2020, these runs provided volume data for the single-occupancy vehicle (SOV), HOV2+, light truck, medium truck, and heavy truck vehicle classes. For model years 2035 and 2050, these runs provided data for the SOV, HOV2, HOV3+, light truck, medium truck, and heavy truck vehicle classes. The regional model runs were provided separately for both the Managed Lanes and Tolloed Lanes alternatives for each of the model years.

## 3.2 Scenarios

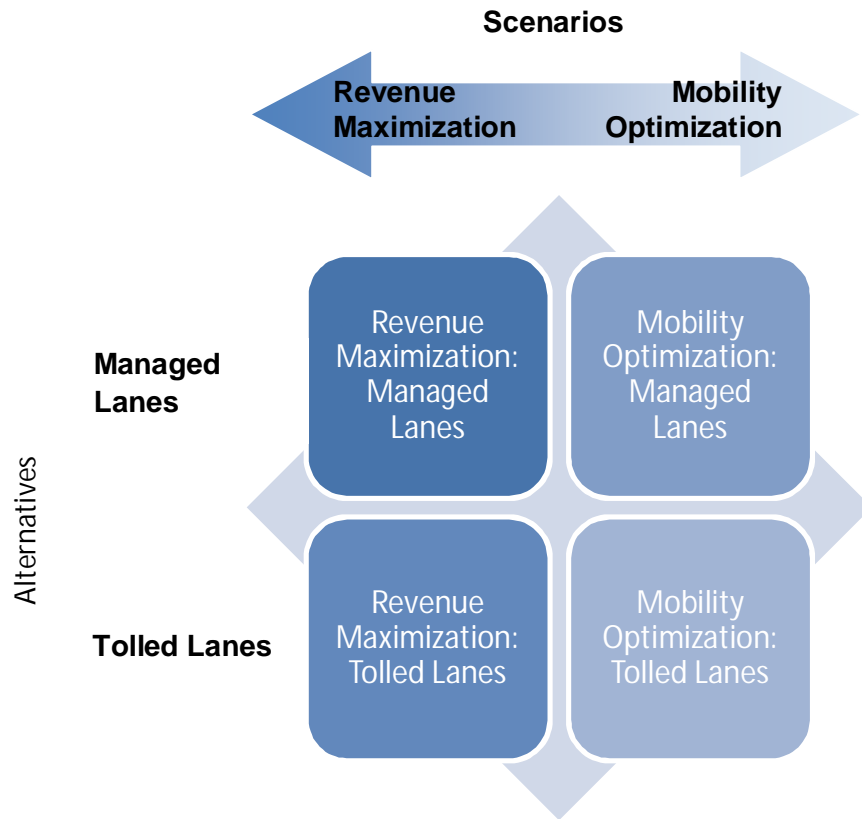
The optimization of the RapidTOM model can be performed utilizing a variety of objectives. In order to evaluate the financial feasibility of the Managed and Tolloed Lanes alternatives, two potential pricing strategies were used to estimate preliminary traffic and revenue forecasts. These pricing strategies have different objectives that represent the extremes of tolling pricing strategies, providing the full spectrum of traffic and revenue outcomes for the corridor. For modeling SR 78, tolls were dynamically optimized on a five-minute basis for individual segments under two alternative operating objectives:

**Toll Revenue Maximization** – this scenario has a goal of maximizing the revenue produced by the Managed or Tolloed Lanes facility.

**Mobility Optimization** – the goal of this scenario is to minimize aggregate travel time cost for all users across both the GP and Managed or Tolloed Lanes.

With the two build alternatives under these two scenarios, a matrix of four build options were analyzed, shown in Figure 2. In both scenarios, minimum Managed and Tolloed Lane travel speeds of 45 miles per hour were imposed on the optimization process.

Figure 2: Scenarios and Build Alternatives



### 3.3 Assumptions

The TOM optimization process requires additional assumptions beyond the facility and seed volume data provided by the SANDAG regional model. The additional assumptions were derived from other, ancillary data obtained from SANDAG staff, Parsons Brinckerhoff staff, or information assembled by ECONorthwest from academic sources or similar Managed and Tolled Lane facilities.

The following are the major supporting assumptions adopted for the SR 78 simulations:

- The value of time distribution for SOVs** was derived using the mean value of time used on similar RapidTOM projects in California. Although SANDAG provided the values of time implicit in the mode-choice step in its regional model, the values were lower than is typically observed in higher-income, developed settings. For example, the following are mean values of time developed for recent Los Angeles County Metropolitan Transportation Authority (LA Metro) work, by time of day:
  - LA Metro, AM peak: \$12.03/hr
  - LA Metro, PM peak: \$11.97/hr
  - LA Metro, Night: \$8.56/hr

In contrast, the SANDAG mode-choice model coefficients are provided by income class and trip purpose as shown in Table 5. As income distribution of the SR 78 corridor trips was not developed, an average value of time could not be calculated. Instead, the lowest average value from the LA Metro modeling, \$8.56/hour, was adopted as a midpoint

between the SANDAG value of time matrix and the LA Metro average values of time. This assumption may be conservative for peak period travel on SR 78.

**Table 5: SANDAG Travel Demand Model Values of Time**

Income Category	Home-Based Work	Home-Based Other	Non-Home Based
Low	\$2.02	\$1.02	\$1.01
Mid	\$5.42	\$2.74	\$2.69
High	\$12.92	\$6.40	\$6.60

- **The value of time distributions for the other vehicle classes** were calculated by scaling the SOV mean value of time by the occupancies. Truck mean values of time were calculated by scaling the SOV mean value of time by a factor of three. This factor is based on academic research that accounts for the driver's wages as well as logistical demands (Smalkoski and Levinson, 2005). The values of time used were originally computed in 2009. Because values of time are believed to be related to household wages (for which per capita income is a proxy), values of time are often brought current to the model year through inflation adjustments. However, in this case, no trend adjustments in values of time were made because intervening economic trends do not suggest strong growth in wages or incomes in the region (Caltrans, 2011).
- **Continuous distributions of the values of time** were used by the TOM process. In the absence of detailed, local estimates of the distribution of values of time, a relative-variance method was employed that adapts the shape of the time-value distribution to the relevant average values. Although a mean value of time has been assumed, not all travelers behave as if their value of time is the mean; instead there is a distribution of values around the mean. The relative variance is a parameter that defines this distribution and has been found to be consistent across regions. Therefore, a San Diego-specific value was not developed.
- **Vehicle occupancies** were used to scale values of time by vehicle for the various vehicle classes. The occupancy of HOV2 vehicles was set to 2.0, HOV2+ average occupancy was set to 2.5, and HOV3+ average occupancy was set to 3.5. These are common occupancy assumptions.
- **Dynamic tolling (tolling that varies with current, ambient conditions)** requires some knowledge of the variability of traffic volumes across the modeled times of day. This information is often available locally by accessing high-resolution traffic counters ("loop detectors") implemented at selected locations in the regional highway network. When available locally, RapidTOM utilizes large draws from the historical count databases and measures variability over the course of a recent year at 5-minute intervals. These efforts yield statistical traffic variability measures that allow the RapidTOM process to emulate toll variability and its effect on traffic and revenue. In the SR 78 case, Caltrans Performance Measurement System (PeMS) traffic counter data were available at several points along the corridor in each direction. Data used were from the one-year period spanning October 1, 2010 to September 30, 2011.

- **Managed Lanes participation rates** were used to adjust for the fact that not all eligible vehicles would wish, or be able, to travel in the lane that is optimal, given all other characteristics of the trip. Often, for example, merge-weave difficulties limit the ability of a vehicle to join a Managed Lane. This analysis assumed a participation rate of 85 percent to reflect ingress/egress and merge/weave issues based on experience with similar corridors.
- **Volume-delay relationships are obtained from the regional model.** The SANDAG regional model uses a logit-based Volume Delay Function (VDF) that is integrated in the TransCAD software. To avoid time-consuming editing of the TOM system's VDF library, this analysis estimated that the parameters of a Bureau of Public Roads VDF match the volume-delay relationship produced by the SANDAG regional model logit VDF.
- **Only weekday travel was modeled** due to insufficient data to explicitly incorporate weekend travel. Weekend travel peaking behavior is usually very different from weekday travel.
- **No "model feedback" analysis was conducted.** Model feedback is the iterative procedure of feeding TOM modeled tolls into the regional model and re-forecasting volumes and then tolls. This process is repeated until forecast volumes reach a stable equilibrium. The feedback process models users' behavioral responses to the tolls, such as changing mode choice. In the absence of model feedback, corridor volumes and revenues have a positive bias. The lack of model feedback steps between the travel demand model and RapidTOM distinguishes the RapidTOM process from the more general TOM process.

Although region-specific data are preferred when modeling Managed or Tolloed lane projects, the various adaptations and imputations of data from other sources performed here are not out of the ordinary. Where such judgment calls are necessary, conservative judgments are made, such as selection of data or parameters that are biased toward yielding underperformance of the facility rather than over performance, particularly to counter the positive bias in volumes and revenues that the RapidTOM process produces. Although this is not a perfect substitute for having localized data, using results based on these estimates can provide useful and balanced information.

### 3.4 Summary of Results

Results from this analysis were used as inputs to the traffic screening criteria in Section 7.0 - Alternatives Evaluation and for developing net revenue estimates as part of the financial feasibility analysis discussed in Section 8.0. In addition, a few features of these results are worth highlighting:

- Under all alternatives and toll policy scenarios, Managed and Tolloed Lane speeds would stay quite high, with averages rarely dipping below 60 mph. GP lane speeds would also remain fairly high, with vehicle-weighted averages only dipping significantly below 45 mph in the eastbound PM peak in 2050 for the Managed Lanes alternative under the revenue-maximizing objective.

- Under the Revenue Maximization objective, revenues would be maximized by posting relatively high tolls that would result in fewer toll-paying users than under the Mobility Optimization objective. This would result in potentially high levels of GP lane congestion but a near free-flowing Managed or Tolled Lane. The benefit of the Managed or Tolled Lane does not rest in the absolute speed of the lane, but in its relative performance compared to the GP lanes.

Because of this, a true Revenue Maximizing toll algorithm would attempt to yield a difference between the Tolled or Managed and GP lane speeds that is as large as necessary to yield maximum revenues. If a larger volume of users were allowed to switch from the GP to the Managed or Tolled Lane, GP lane speeds would increase, and Managed or Tolled Lane speeds would decrease. With a decline in the relative speed advantage of the Managed or Tolled Lane, a user's willingness to pay tolls on the margin would also decline, and as such, equilibrium toll prices would also decline.

- Under the Mobility Optimization objective, the optimization process tends to entice large numbers of users, especially users with lower values of time, into the Managed or Tolled Lanes. This would result in lower tolls than in those alternatives with the Revenue Maximization objective.
- Revenues are sensitive to the choice of carpool policy. Under an HOV2+ toll policy, as in the Managed Lanes alternative in 2020, many more vehicles are candidates to use the new lanes for free. This tends to make the speed advantages of the Managed Lanes more variable with toll-paying capacity than under the HOV3+ policy. If an HOV2+ policy were implemented in place of the HOV3+ policy modeled in 2035 and 2050, all revenues would fall.
- Average tolls would be highest during the AM peak in the westbound direction, particularly in the Escondido-Vista segment of the facility. For the Managed Lanes alternative in 2020, under the Revenue Maximizing objective, the average posted toll in the AM peak for the westbound direction on the Escondido-Vista segment would be \$0.10 per mile. For the Tolled Lanes alternative the same toll would be \$0.14 per mile. Under the Mobility Optimization objective for the same time period, year, and segment, posted tolls would be \$0.07 per mile for the Managed Lanes alternative and \$0.05 per mile for the Tolled Lanes alternative. Toll levels would increase as traffic volumes and congestion increase in 2035 and 2050. For comparison, the average daily (not peak period) toll per mile on the I-15 is \$0.19 per mile in the northbound direction and \$0.15 per mile in the southbound direction (SANDAG, 2012).
- Under Revenue Maximization, the average toll a customer would pay for an AM peak trip in the westbound direction between Escondido and Oceanside (approximately 17 miles) in 2020 would be \$1.33 (2011\$) for the Managed Lanes alternative. For Tolled Lanes, the average AM peak, westbound toll would be \$2.05. Under Mobility Optimization, the average AM peak, westbound toll would be \$0.96 per trip for the Managed Lanes alternative and \$0.64 per trip for the Tolled Lanes alternative. In comparison, on the I-15 Express Lanes, the average weekday toll rate a customer pays is \$2.04 in the northbound direction and \$1.49 in the southbound direction (SANDAG, 2012) with average trip lengths of 10.63 and 10.27 miles, respectively. This is an average for the

whole day and tolls are often much higher during the peak. Tolls can range from \$0.50 to \$8 based on congestion in the lanes.

It is important to note that during any point during the three-hour long AM and PM peak periods, tolls may be significantly higher and GP lane speeds significantly lower and vice-versa than those of the three-hour average for the period. In summary, the level of revenues is sensitive to Managed or Tolloed lane policy and pricing scenarios in a manner consistent with theoretical expectations. Because the RapidTOM tolling tool was used to develop traffic and corresponding revenue projections, it should be used primarily for sketch planning, and not for investment purposes. Although refined modeling and integration of more detailed engineering issues would change the levels of some of the performance measures reported here, they would not likely change the relative performance of various toll, carpool policy, and facility build assumptions.



## 4.0 ENGINEERING FEASIBILITY

The engineering review of the project included the definition of the high-level project footprint. This was accomplished by applying the standard Caltrans freeway cross section to the length of the corridor. Where there would be substantial impacts to existing structures and facilities, key design exemptions from the Caltrans Highway Design Manual (HDM) were identified. As this study is a high-level planning effort, the project footprint created through this process is conservative as it does not assume design exceptions besides those that would be critical to the project. Based on the high-level footprint, potential right-of-way and environmental impacts were identified.

### 4.1 Existing Information

Existing digital data were compiled to create a base map showing the existing SR 78 centerline, corridor parcel, and corridor environmental boundaries superimposed over aerial imagery. This study utilized the existing information described below:

- SR 78 centerline data in digital format from Caltrans
- SR 78 as-built bridge plans from Caltrans
- Commercially available digital aerial imagery
- San Diego Geographic Information Systems (SanGIS) parcel and environmental habitat geographic information systems (GIS) coverage
- Proposed auxiliary lane locations from SANDAG/Caltrans

### 4.2 Methodology – Corridor Footprint

In order to develop preliminary highway geometrics for the Managed and Tolloed Lanes alternatives, with input from SANDAG and Caltrans, the following key assumptions were identified and used to define the high-level SR 78 Corridor footprint:

- A standard Caltrans freeway cross section, consisting of two (2) Managed or Tolloed Lanes and six (6) GP lanes, was adopted for both build alternatives. Managed or Tolloed Lanes were separated from the GP lanes by a 4-foot buffer. The standard section was applied throughout the corridor, unless design exceptions were warranted due to significant impacts to existing structures and facilities. This cross section is shown in Appendix C.
- All proposed operational auxiliary lanes and existing auxiliary lanes were included in the proposed corridor footprint by extending the applied cross sections in the applicable segments.
- Since topographic and profile information were not available, a 15-foot wide buffer was assumed for grading and/or retaining walls beyond the edge of the shoulder in both directions.
- This engineering study does not contain operational or geometric analyses of the existing interchanges.

Based on the standard project typical section and auxiliary lane locations, the high-level project footprint was developed by offsetting the centerline geometry to establish the new limit of improvements. Once this footprint was established, potential adjustments to the existing centerline were evaluated in order to reduce right-of-way and environmental impacts.

Additionally, a footprint was developed for Baseline A, which includes the corridor operational improvements programmed in the 2010 RTIP. Impact estimates based on this footprint allowed for comparison of impacts between the build and no build alternatives. Additional assumptions and design exemptions are discussed in the following sections.

### 4.3 Methodology – Interchanges

Based on the high-level project footprint assumptions, overcrossing bridges were reviewed to identify bridges that have to be replaced, bridges that have abutment slopes that could be replaced with walls, or those bridges that could remain in place. Bridge as-built plans were also reviewed to ensure that minimum vertical clearances would be met in the future widened condition.

Interchange limits were set to the ends of ramp geometry. Right-of-way and environmental impacts were limited to the mainline sections only and do not include potential impacts from interchange development. In order to develop a cost estimate, interchange improvements were classified into three categories:

- Complete rebuilding of interchange including bridge and ramps
- Widening of undercrossing bridge and reconstruction of ramps
- Realignment of ramps without major modifications to the existing interchange structure.

### 4.4 Frontage Roads

In the existing condition, there are extensive frontage roads on both sides of the freeway. In many locations, there is insufficient right-of-way to widen the freeway without impacting the adjacent frontage roads. The Corridor Study assumes that frontage roads, where impacted by the freeway widening, would be reconstructed with the existing full cross section at the displacement required by the new SR 78 cross section. The existing configuration would be preserved but no additional capacity would be added to frontage roads.

### 4.5 Right-of-Way and Environmental Impacts

Based on the defined high-level footprint, parcel lines and environmental resource boundaries were utilized to identify the areas of environmental impact and right-of-way acquisitions. Right-of-way estimates were based on only the areas where the high-level footprint intersected with private property. Parcels were classified as potential partial or full takes based on the extent of the impact, as well as the current utilization of the property. Potential right-of-way and environmental impacts due to reconstruction or reconfiguration of existing interchanges were not included in the estimate because these facilities have not been designed yet. Potential impacts due to realigned frontage roads are included in the estimates. The estimated potential right-of-way impacts for Baseline A and the Managed and Tolloed Lanes alternatives are summarized in Table 6. The estimated potential sensitive environment impacts for Baseline A and Managed and Tolloed Lanes alternatives are summarized in Table 7.

**Table 6: Estimated Potential Right-of-Way Impacts**

	<b>Baseline A: No Build + RTP</b>	<b>Managed/Tolloed Lanes</b>
<b>Right-of-Way</b>	1 acre	30-34 acres

Source: SanGIS, September 2010

**Table 7: Estimated Potential Sensitive Environments Impact**

	<b>Baseline A: No Build + RTP</b>	<b>Managed/Tolled Lanes</b>
<b>Sensitive Environments</b>	0.5 acres	4 - 10 acres
<b>Linear Feet of Contact with Rivers</b>	600 feet	1,900 - 4,340 feet

Sources: National Wetlands Inventory, U.S. Fish and Wildlife Service, January 2010; SanGIS, September 2004; SanGIS, July 2006

## 4.6 Design Exceptions and Assumptions

This study does not identify all the possible design exceptions within the project limits. The inclusion of design exceptions at this stage of a project was assumed to be premature. However, the design exceptions that were assumed to be necessary to develop the high-level project footprint have been listed below:

- Highway Design Manual (HDM), 301.1 and 302.1 - Traveled way width and Shoulder width (Mandatory) - At the locations of the two existing SPRINTER bridges, there is insufficient width between the columns to allow for the standard section.
- HDM, 304.1 - Side slope standards (Advisory) - Because this is a developed corridor, with frontage roads and properties adjacent to the freeway, standard side slopes/grading requirements cannot be satisfied.
- HDM, 309.1 (2) - Horizontal Clearances - Clear Recovery Zone (Advisory) Since this is a developed corridor, with frontage roads and properties adjacent to the freeway, clear recovery zone requirements cannot be satisfied.
- HDM, 309.2 (a) - Vertical Clearances (Mandatory) - At El Camino Real Overcrossing, the vertical clearance over the future freeway facility would not meet the minimum requirement of 16.5 feet.

Additional results of the engineering review based on the methodology described above are discussed in the following sections: Section 5.0 - Planning Level Capital Cost Estimate; 6.0 - Environmental Constraints; and 7.0 - Alternatives Evaluation.

## 5.0 PLANNING LEVEL CAPITAL COST ESTIMATE

In accordance with the Caltrans *Project Development Procedures Manual (PDPM)*, a preliminary rough order of magnitude cost estimate was developed for the project. It was based on the engineering assumptions and evaluation described in the previous section, Engineering Feasibility. The summary-level cost estimate is provided in Table 8. As this is a very preliminary stage of the project, a range of costs were developed for some items, which resulted in a range for the overall cost estimate. The cost methodology and assumptions are as follows.

### **Earthwork**

Based on observations noted during field visits and commercially available software, a rough estimate of cuts and fills was developed to calculate earthwork quantities.

### **Pavement Structural Section**

The width of the freeway was developed using the standard Caltrans cross section with limited design exceptions, as identified in the previous Engineering Feasibility section, including auxiliary lanes identified in the build alternatives. In the existing condition, sections of the inside shoulder were observed to be sloped against the adjacent mainline lanes. Costs for the removal and replacement of this median pavement were included as were costs for reconstruction or relocation of the frontage roads.

### **Retaining Walls and Barriers**

The same assumptions made for the earthwork quantities were extended to identify the locations and heights of retaining walls. Due to the proximity of frontage roads and the built-out nature of the corridor, barriers were assumed between the frontage roads and the freeway, and also where there is insufficient width to meet the standard grading/clear recovery zone requirements. In addition, concrete barrier replacement for the sections with median pavement reconstruction was included.

### **Intelligent Transportation Systems (ITS)/Signage for Tolling**

The number of Managed or Toll Lane access locations was determined based on the length and travel characteristics of the corridor. Unit costs for equipment were based on the cost estimate for the LA Metro Express Lanes on I-10 and I-110 in Los Angeles County.

### **Environmental Mitigation**

A mitigation cost was applied to the potential sensitive environmental impacts determined in the footprint analysis assuming a 3:1 mitigation rate. This item also included landscaping costs for the length of the project.

### **Percentage Costs**

Because of the preliminary stage of the project, for items such as traffic and lighting, utilities, drainage and water quality, stage construction, and minor items, percentages of the overall calculated costs were applied based on prior experience and projects.

### **Interchanges**

This item included the rebuilding or reconfiguration of interchanges, where applicable. However, the costs of replacement of the I-5 and I-15 interchanges were not included in this project as the costs of replacing these interchanges are included in the 2050 RTP as separate projects. The cost of the structures, i.e., bridge replacement or widening, was included in this line item.

As described in the Engineering Feasibility section, interchanges were classified into three categories:

- Complete rebuilding of interchange including bridge and ramps
- Widening of undercrossing bridge and reconstruction of ramps
- Realignment of ramps without major modifications to the existing interchange structure.

Each of these categories was assigned a cost range, based on other Caltrans projects of similar magnitude. At some interchanges, the existing ramps tie into the frontage road rather than the cross street. With the widened freeway and current Caltrans ramp design criteria, these ramps may have to be reconstructed with the standard layout requiring extensive reconstruction and right-of-way acquisition. The overall interchange cost applied to the three categories of interchanges includes all of these costs.

**Right-of-Way**

Right-of-way impacts for the mainline were identified using the high-level project footprint. The costs for the various parcels were assigned based on the land use and historical prices. This cost also included right-of-way acquisitions for the reconstruction of the frontage roads. Right-of-way costs for interchanges were included in the costs for the interchange improvements as noted above.

**Contingency**

Based on the Caltrans PDPM, a 30-50% range for project contingency is recommended for projects in this stage of the design process. A contingency of 40% was used for the Corridor Study. Contingencies were applied to roadway and right-of-way costs but not to interchange costs. Contingencies were not included for interchanges as interchange costs are based on comparable total project costs which include contingencies.

**Unit Costs**

Where available, unit costs from bids on recent SR 78 corridor projects were used to develop unit costs for the SR 78 capital cost estimate. The projects included SR 78 Eastbound Auxiliary Lanes, SR 78 Westbound Auxiliary Lanes, and the Nordahl Road Bridge Replacement. Any unit costs that were not included in these bids were unit costs identified for the Mid-Coast Corridor Transit Project, which in turn were developed from the Caltrans Costs Database from 2010, escalated to 2011.

**Table 8: Planning Level Capital Cost Estimate (in 2011 dollars)**

		Cost Range	
	Summary of Items	Low	High
1	Earthwork	\$16,800,000	\$16,800,000
2	Pavement Structural Section	\$38,950,000	\$38,950,000
3	Specialty Items: Barriers, Walls	\$73,000,000	\$73,000,000
4	Environmental Mitigation	\$8,000,000	\$8,000,000
	<b>Subtotal (for items 1-4)</b>	<b>\$136,750,000</b>	<b>\$136,750,000</b>
5	ITS/Signage for Tolling	\$11,200,000	\$11,200,000
6	Traffic and Lighting (including Electrical, Signing and Striping); 3% - 5%	\$4,102,000	\$6,838,000
7	Utilities; 3% - 5%	\$4,102,000	\$6,838,000
8	Drainage and Water Quality; 5% - 7%	\$6,838,000	\$9,572,000
9	Stage Construction; 5% - 7%	\$6,838,000	\$9,572,000
10	Minor Items - 10%	\$13,675,000	\$13,675,000
11	Mobilization - 10%	\$13,675,000	\$13,675,000
	<b>Mainline Roadway Subtotal</b>	<b>\$197,180,000</b>	<b>\$208,120,000</b>
12	Interchanges (including Structures)	\$85,000,000	\$85,000,000
13	Right-of-Way	\$112,872,000	\$117,248,000
14	Contingencies - 40%	\$287,000,000	\$414,000,000
	<b>Total Capital Construction Cost</b>	<b>\$682,052,000</b>	<b>\$824,368,000</b>
15	Preliminary Design - 5%	\$34,103,000	\$41,218,000
16	Final Design - 10%	\$68,205,000	\$82,437,000
17	Project Management - 5%	\$34,103,000	\$41,219,000
18	Construction Management - 12%	\$81,846,000	\$98,924,000
19	Professional Liability - 2.5%	\$17,051,000	\$20,609,000
	<b>Total Project Cost</b>	<b>\$917,360,000</b>	<b>\$1,108,775,000</b>

Note: Figures rounded to nearest \$1,000.

## 6.0 ENVIRONMENTAL CONSTRAINTS

This review of environmental constraints in the SR 78 Corridor considers available information about corridor resources to examine the potential effects of implementing Managed or Tolled Lanes on SR 78 from I-5 to I-15. The review identifies environmental technical studies that likely will be required to support the project, evaluates the required environmental document types, and provides a preliminary list of permits that may be required for the improvements. This review was completed utilizing Caltrans *Guidelines for Preparing a Preliminary Environmental Analysis Report*, but does not contain all of the information required to support a Project Study Report (Project Development Support). Areas of significant environmental concern were observed during either site reconnaissance from public access areas or Caltrans right-of-way.

*This review is not an environmental document, does not contain substantial environmental analysis, and does not meet state or federal requirements for any form of environmental review process or approval.*

### 6.1 Anticipated Environmental Approvals

Construction of Managed or Tolled Lanes in the SR 78 Corridor would likely require acquisition of right-of-way and have adverse impacts requiring mitigation. To meet California Environmental Quality Act requirements, an Environmental Impact Report is anticipated. Regarding the National Environmental Policy Act, the project is classified as a Class III action under 23 CFR 771.115, which may meet the requirements for a Finding of No Significant Impacts. Because the size and location of the project would likely result in substantial public interest, Caltrans may elect to prepare an Environmental Impact Statement rather than an Environmental Assessment. As part of the Project Study Report process, Caltrans will determine the appropriate type of environmental document and necessary technical studies.

The City of San Marcos is currently working towards environmental approvals for widening a limited section of the SR 78 Corridor – approximately 0.75 miles between San Marcos Boulevard and Twin Oaks Valley Road – and expects it to be permitted in the fall of 2012.

### 6.2 Environmental Technical Studies

The Managed or Tolled Lanes alternatives would require completion of several technical studies. This section summarizes the currently available information and general scope of anticipated technical studies by environmental discipline. The necessary technical studies will be confirmed and refined by Caltrans as part of the project's Project Study Report.

#### **Land Use, Growth, Farmlands, and Timberlands**

The SR 78 Corridor has suburban characteristics, and contains existing, planned, and potential Smart Growth place types: special use center, mixed-use transit corridor, community center, town center, and urban center. Residential land uses include single- and multi-family units, as well as mobile home parks and group quarters facilities such as student housing. The corridor contains a variety of employment and activity centers including shopping centers, retail/commercial, hotels/motels, low-rise office, healthcare, education, government, and industrial uses which are directly adjacent to the SR 78 Corridor. California State University, San Marcos (CSUSM) and Palomar College are major educational institutions situated directly adjacent to SR 78. The SPRINTER rail line offers infrastructure and services parallel to SR 78.

Corridor cities have recently experienced substantial growth, which is expected to continue, although at a slower rate, through 2050. Farmlands and timberlands are not significant resources in the corridor. Despite the low potential for adverse effects caused directly by the project, land use and growth should be addressed in a technical study because of the potential for indirect and cumulative effects.

### **Community Impacts, Community Character, Cohesion, Utilities, Community Services, and Environmental Justice**

The SR 78 Corridor crosses through a series of communities, including the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, and parts of unincorporated San Diego County. Because there is an existing highway, the proposed improvements would likely not create substantial new adverse impacts to community character and cohesion. The corridor includes publicly-owned parklands and the Buena Vista Lagoon State of California Ecological Reserve. A take of some Ecological Reserve property may be necessary to construct the preliminary high-level footprint; therefore, the project may result in a Section 4(f) use of parklands. Detailed analysis would be required to determine if this impact is *de minimis*.<sup>1</sup> Mitigation would be required for any utilities or community services disrupted by project construction. A Community Impact Assessment should be completed for the project, including review of demographic data for potential Environmental Justice populations.

### **Acquisitions and Displacements**

The build alternatives could require the acquisition of between approximately 30 and 34 acres of additional right-of-way. As parcels with existing residential and commercial development could potentially be impacted, an evaluation of acquisitions and displacements would be required.

### **Visual and Aesthetics**

The build alternatives would widen an existing highway through a mixed-use area of commercial, residential, and open-space uses. Because of the existing highway, the project would not substantially alter the visual landscape. However, project features, such as retaining or noise walls or tolling equipment could create new visual elements; therefore, visual and aesthetic issues would require additional review.

### **Cultural Resources**

The project must comply with Section 106 of the National Historic Preservation Act and California Public Resources Code 5024. Some resources that fall within these categories have been identified adjacent to the existing SR 78 corridor. At this point, it is not known whether the build alternatives would or would not affect any known historic properties; however, a survey of potentially eligible properties would need to be completed. At a minimum this includes establishing the Area of Potential Effects, consultation with Native American Tribes and other interested parties, and completing surveys for eligible historic properties, including archaeological, architectural, and paleontological resources.

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<sup>1</sup> *De minimis* impacts related to historic sites are defined as the determination of either "no adverse effect" or "no historic properties affected" in compliance with Section 106 of the National Historic Preservation Act. *De minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not "adversely affect the activities, features and attributes" of the Section 4(f) resource.



**Hydrology, Floodplains, Water Quality, and Stormwater Runoff**

The build alternatives would increase impervious surface, resulting in additional stormwater runoff and pollutant loading. The project would run adjacent to Buena Vista Lagoon and cross multiple streams. SR 78 is within the 100-year Federal Emergency Management Agency flood plain for Buena Vista Creek, Buena Creek, Agua Hedionda Creek, and San Marcos Creek. The project would likely require stormwater mitigation. The project would require technical studies considering waters of the U.S., hydrology and floodplains, water quality, stormwater runoff, and the effects of potential sea level rise on the project.

**Geology, Soils, Seismic, and Topography**

Geotechnical site characterization, including identification of potential seismic faults would be required. Site conditions could require design mitigation to address foundation requirements or faulting hazards.

**Hazardous Waste and Materials**

Because of the existing development in the corridor and potential acquisition of property, the build alternatives would require an Initial Site Assessment (ISA) and likely a Preliminary Site Investigation based on the findings of the ISA.

**Air Quality**

The study corridor is in a Non-attainment Area for ozone. The build alternatives would require an air quality technical study, including review of mobile source air toxics.

**Noise and Vibration**

The build alternatives would be Type I projects requiring a noise study and mitigation of noise impacts where doing so is feasible and reasonable. Much of the corridor is commercial, but residential uses, parklands, and institutional uses border the corridor in several locations. It is likely that noise levels would approach or exceed the noise abatement criteria in several locations.

**Energy and Climate Change**

It is not likely that energy use and greenhouse gas impacts would be significant; however, the build alternatives would require an energy technical report and a quantitative analysis of greenhouse gas emissions.

**Biological Resources**

The west end of the corridor begins at the Buena Vista Lagoon Ecological Reserve, which is owned and operated by the California Department of Fish and Game. The corridor includes several conservation areas identified in the Multiple Habitat Conservation Program (MSCP) for the jurisdictions in north San Diego County. The corridor crosses several streams and wetland habitat areas. Based on the right-of-way and environmental analysis discussed in the Engineering Feasibility section, the project could potentially affect:

- 4 - 10 acres of wetlands including:
  - 0 acres of Estuarine and Marine Wetland
  - 2 acres of Freshwater Emergent Wetland
  - 3 - 9 acres of Freshwater Forested/Shrub Wetland
- 1,900 - 4,340 linear feet of contact with rivers

The build alternatives would require consultation with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Department of Fish and Game, California Coastal

Commission, and Regional Water Quality Control Board. It would require a Wetlands Delineation, Natural Environment Study, and may require a Biological Assessment.

**Cumulative Effects**

The build alternatives would add capacity to a state highway. It has potential to influence land use and other resources and would require an analysis of indirect and cumulative effects.

**Section 4(f)**

There may be use of Section 4(f) resources at Buena Vista Lagoon State of California Ecological Reserve. A detailed analysis would be required to determine if this impact is *de minimis*. Additional corridor Section 4(f) resources are unknown pending future analysis of parklands and historic properties.

### 6.3 Anticipated Permits

Caltrans, through future project development steps, will define and confirm the permits required for implementation of the SR 78 project. At this time, it is anticipated that required major permits could include:

- Section 401 Water Quality Certification
- Section 404 (Individual or Nationwide)
- Section 10 Navigable Waters Permit (depending on the nature of work at Buena Vista Lagoon)
- Fish and Game 1602 Agreement
- Coastal Development Permit
- National Pollutant Discharge Elimination System (NPDES) Permit
- Section 7 consultation (likely formal consultation)

## 7.0 ALTERNATIVES EVALUATION

### 7.1 Methodology

To compare the alternatives, the results from the traffic, engineering, and environmental analyses were evaluated against screening criteria. The following screening criteria were utilized as defined in Section 2.3:

- **Travel Times** - This criterion evaluated model year forecasted average travel times for SOV, HOV and transit modes for the AM Peak, PM Peak, and Off-Peak time periods for the Oceanside-Vista, Vista-Escondido, and Oceanside-Escondido segments for both eastbound and westbound directions. Travel times for Baseline A and Baseline B were derived from the SANDAG model, and those for the Managed and Tolled Lanes alternatives were derived from the RapidTOM output.
- **Arterial Level of Service** - This criterion, derived from the SANDAG model, evaluated the differences in level of service (LOS) of the arterials adjacent to the SR 78 facility in the study area.
- **Safety** - Safety was qualitatively assessed based on planned improvements across the alternatives.
- **Improvement to Transit and HOV Mobility** - This criterion was qualitatively assessed based on planned transit and HOV improvements for each alternative.
- **Study Area Mode Shares** - This criterion, derived from the SANDAG model, evaluated SOV, HOV, transit, walk, and bicycle mode shares.
- **Percent of SR 78 Congested** - This criterion, derived from the SANDAG model and RapidTOM, measured the percent of SR 78 that has level of service (LOS) E or F and LOS F. This measure was provided for AM Peak and PM Peak periods.
- **Estimated Right-of-Way Needed** - This criterion measured the range of acres potentially needed for full and partial right-of-way takes based on the high-level project footprint as discussed in Section 4.5. The range reflects right-of-way needs considering potential revisions to the SR 78 centerline to minimize right-of-way and sensitive environment impacts.
- **Potential Impact on Sensitive Environments** - This criterion measured the potential acres of impact on sensitive environments and linear feet of contact (either crossing or lateral contact with the existing stream channel) with rivers as discussed in Section 4.5. The range of sensitive environment impacts considers potential revisions to the SR 78 centerline in order to minimize both the right-of-way and the sensitive environment impacts.
- **Person Hours Saved** - This criterion, derived from the SANDAG model and RapidTOM output, measured the difference in person hours traveled compared to the baseline. Person hours traveled was calculated for each of the modeled years for the entire length of the study corridor for off-peak, AM peak, PM peak, and daily periods. To obtain person hours saved, person hours traveled in Baseline A was subtracted from each of the alternatives.
- **Cost-Effectiveness** - Cost-effectiveness was considered qualitatively as the proportion of rough order of magnitude costs divided by estimated person hours saved.

Additionally, based on input from the Technical Working Group, the criteria were weighted to reflect the relative importance of some screening criteria. The travel times, percent of SR 78

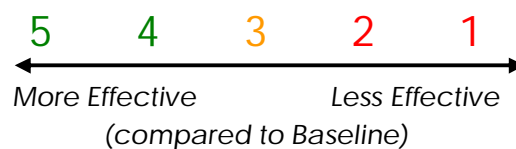
congested, and person hours saved criteria were each weighted twice as strongly as the other criteria in the final screening of alternatives.

## 7.2 Screening Analysis

Using the screening criteria, the build alternatives incorporating the two revenue scenarios were evaluated against the two baselines. When comparing the effectiveness of alternatives against each baseline, in general, the direction of improvement is similar but the magnitude is different. For brevity and clarity, comparisons to Baseline A are included in this discussion, though some of the results for Baseline B are shown in the figures to illustrate that the differences between the two are small.

The build alternatives were rated from 1 to 5 based on the effectiveness of the alternative relative to the baseline. It can be assumed that the baselines were rated 3 on all criteria. If an alternative was more effective than the baseline in a particular criterion, it was rated greater than 3; if it was less effective than the baseline, it was rated less than 3; and if it is as effective as the baseline, it was rated a 3. The screening criteria rating scale is also shown in Figure 3. All screening criteria ratings were developed in collaboration with the SR 78 Corridor Study Technical Working Group.

**Figure 3: Screening Criteria Rating Scale**



### Average Travel Times

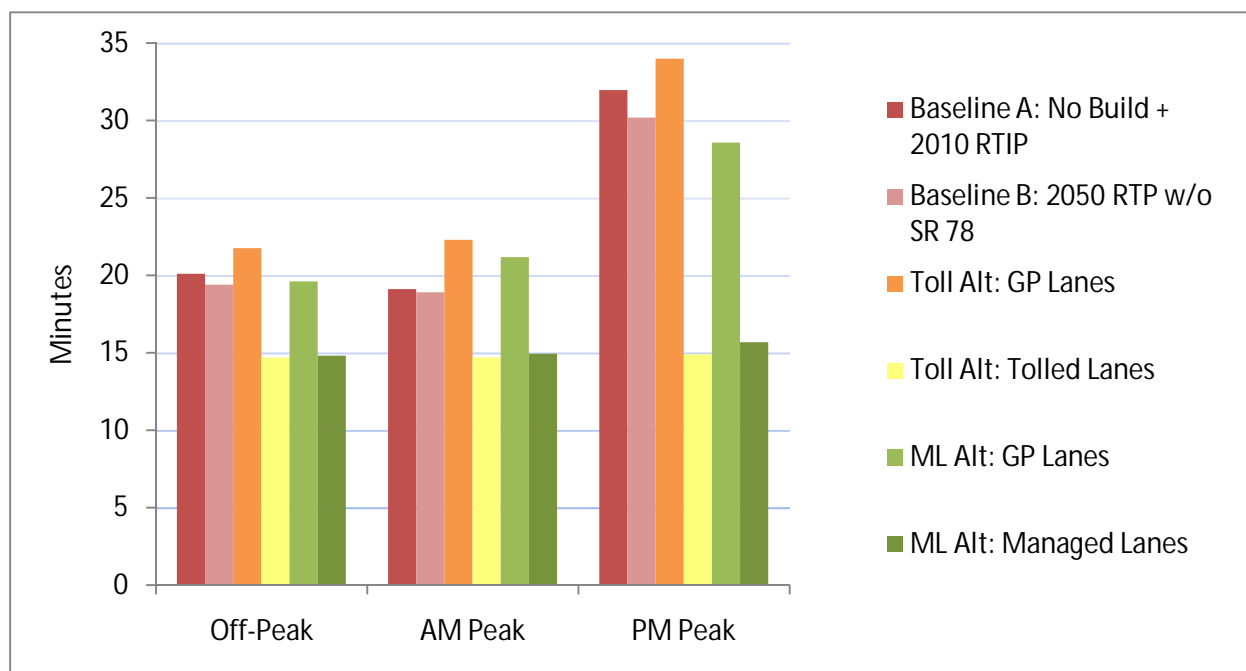
Travel times between Oceanside and Escondido in 2050 are presented in Figure 4 through Figure 7 for the off-peak, AM peak, and PM peak periods on SR 78 in both eastbound and westbound directions under the different combinations of revenue scenarios and alternatives.

As HOVs would be able to access the Managed Lanes but not the Tolloed Lanes without paying a toll, HOV travel times are projected to be better in the Managed Lanes alternative. Under Revenue Maximization, the Managed and Tolloed Lanes both would have improved travel times compared to Baseline A. However, the GP lanes under the Managed and Tolloed Lanes alternatives generally would have increased travel times compared to Baseline A. Thus, the build alternatives received a screening criteria score of 3 under the Revenue Maximization scenario. Under Mobility Optimization, the travel times in both the GP lanes and Managed or Tolloed Lanes would be either similar to or improved compared to Baseline A. Thus the build alternatives each received a score of 4 under the Mobility Optimization operations scenarios.

### Arterial Level of Service

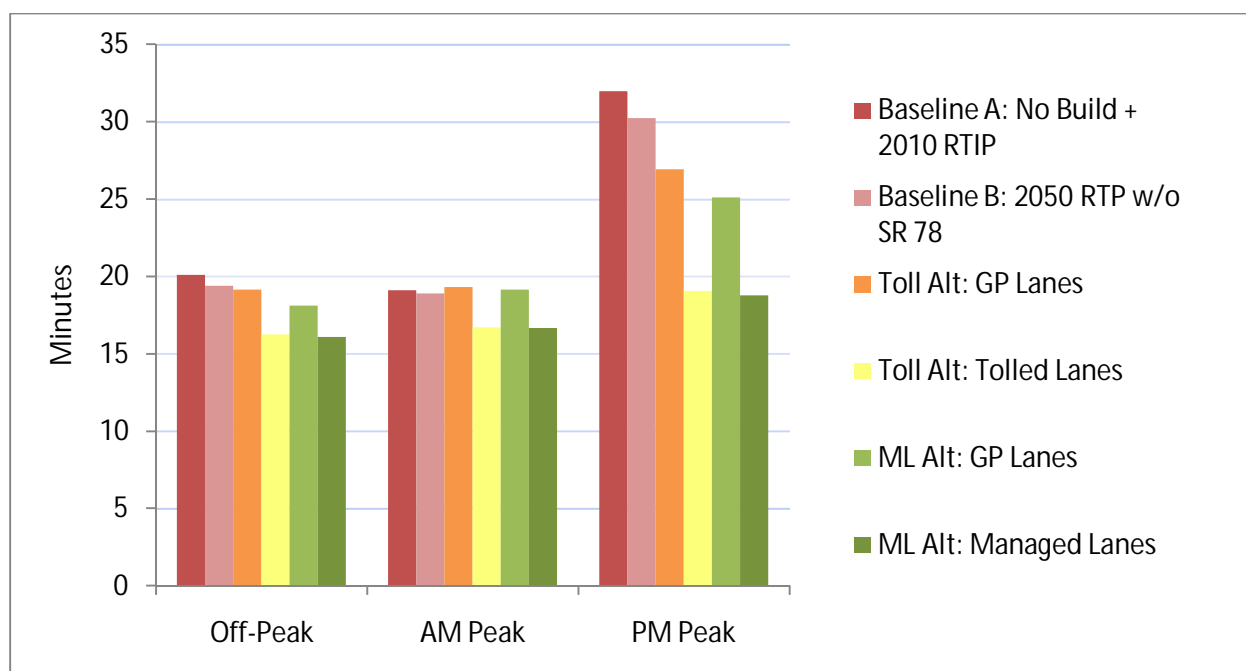
The arterial daily level of service was examined by comparing the LOS of the links in the area adjacent to SR 78, focusing on those that differed in LOS E or F among the alternatives. The build alternatives would have slightly fewer arterial links with LOS F compared to Baseline A, and the differences in arterial LOS between Managed and Tolloed Lanes would not be substantial. Thus, the build alternatives were both rated 4.

**Figure 4: Average Travel Times on SR 78 Facility – 2050 – Eastbound – Revenue Maximization Revenue Scenario**



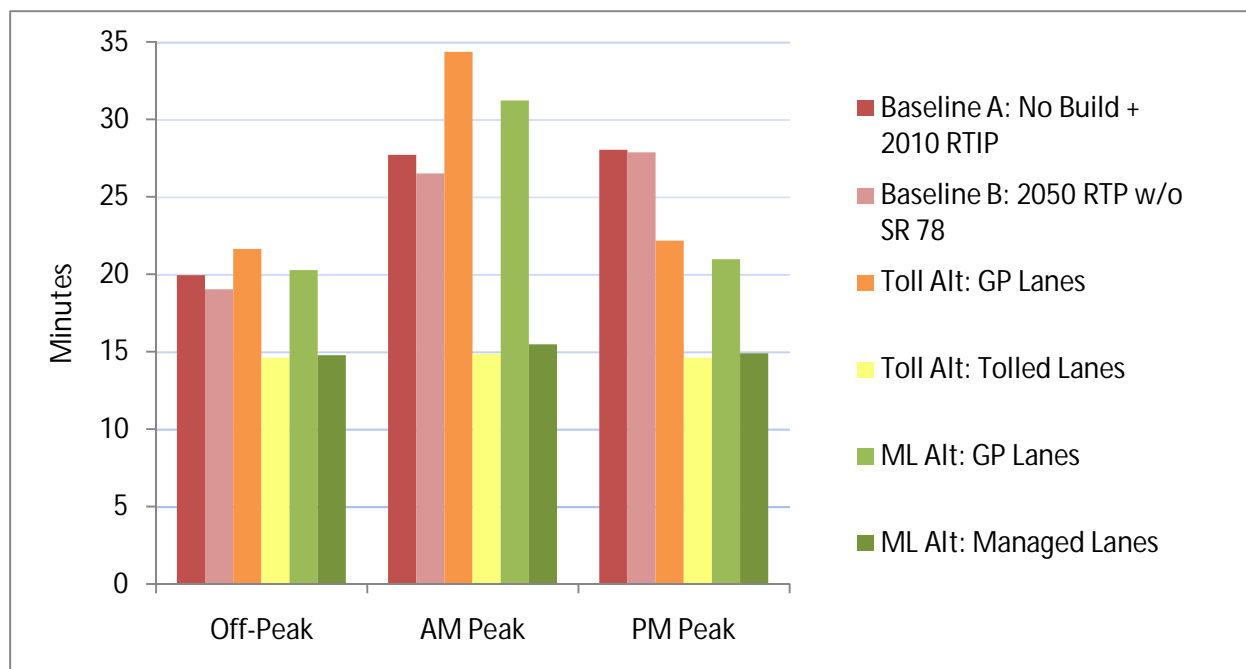
Note: GP = General Purpose ML = Managed Lanes

**Figure 5: Average Travel Times on SR 78 Facility – 2050 – Eastbound – Mobility Optimization Revenue Scenario**



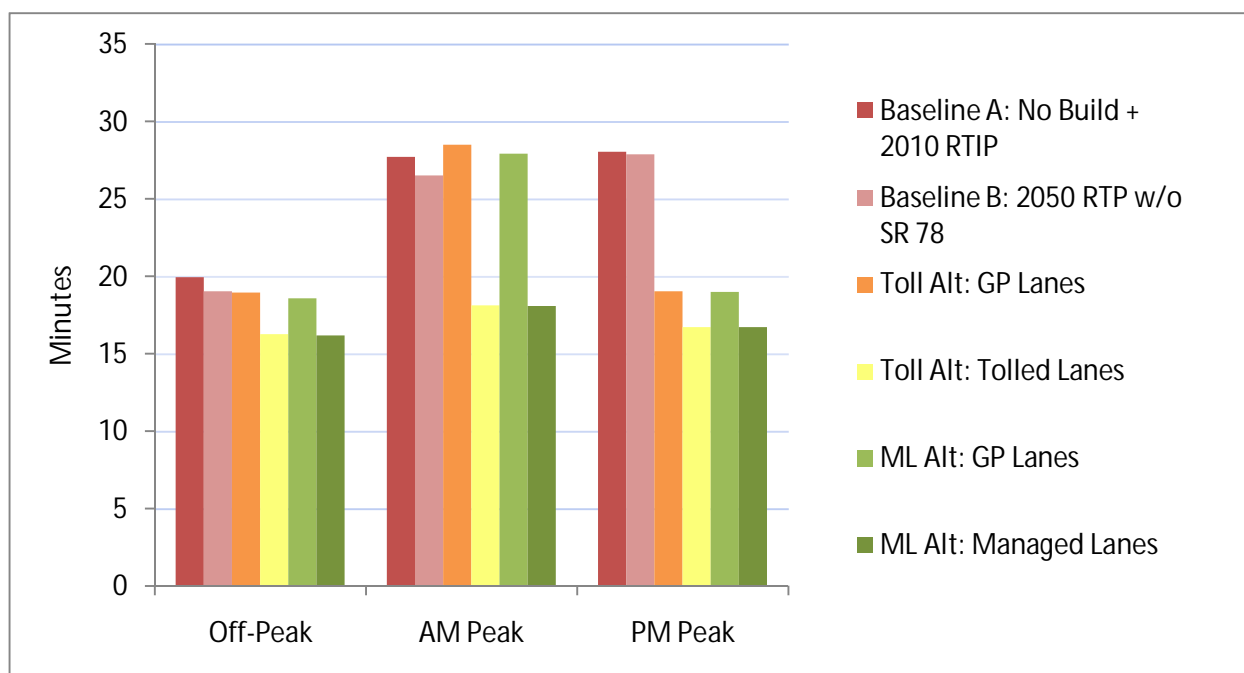
Note: GP = General Purpose ML = Managed Lanes

**Figure 6: Average Travel Times on SR 78 Facility – 2050 – Westbound – Revenue Maximization Revenue Scenario**



Note: GP = General Purpose ML = Managed Lanes

**Figure 7: Average Travel Times on SR 78 Facility – 2050 – Westbound – Mobility Optimization Revenue Scenario**



Note: GP = General Purpose ML = Managed Lanes

**Safety**

The existing facility includes many elements that do not meet current Caltrans Design Standards including ramp configurations, sight distance exceptions, vertical clearances, and clear recovery zones. Both the Managed and Tolled Lanes alternatives would implement Caltrans Design Standards and would be physically identical. Therefore both alternatives would result in improved safety, with a screening criteria score of 5, compared to Baseline A.

**Improvement to Transit and HOV Mobility**

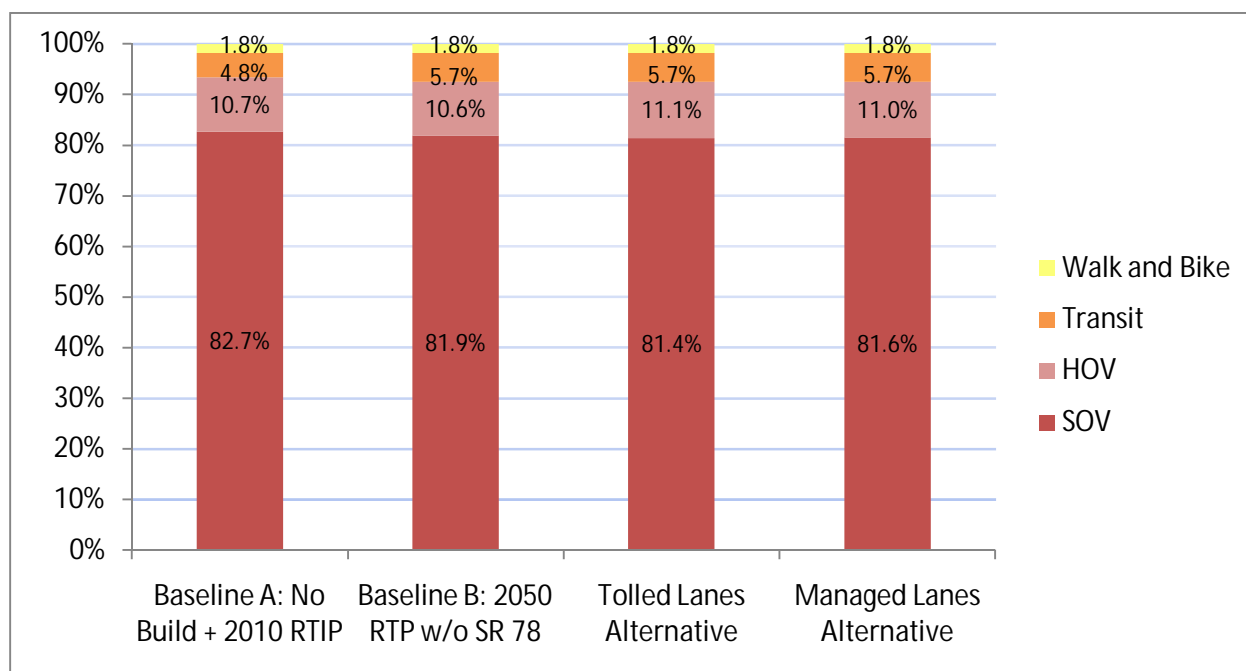
The Managed Lanes alternative would allow for HOVs (2+ in 2020, 3+ in 2035 and 2050) to access the facility for free, whereas Tolled Lanes would treat HOVs the same as SOVs and require them to pay a toll for access. Both Managed and Tolled Lanes alternatives would include additional transit corridor bus routes that are not included in the Baseline alternatives.

Over Baseline A, the build alternatives would include corridor transit improvements planned in the 2050 RTP, including the double-tracking and extension of the SPRINTER. In addition, the Tolled Lanes alternative would provide express bus service on SR 78 in the 2020 phase in order to provide an enhanced mobility option in the corridor as an alternative to paying a toll. This service would be phased out with the implementation of the SPRINTER double tracking as it would provide a replacement enhanced mobility option.

Based on qualitative review of the transit and HOV elements, the Managed Lanes alternative scored a 5 under both scenarios because of improved HOV and transit options. Because the Tolled Lanes alternative would provide less incentive for HOV travel but still include enhanced transit options, it scored a 4 under Mobility Optimization and 3 under Revenue Maximization.

**Study Area Mode Share**

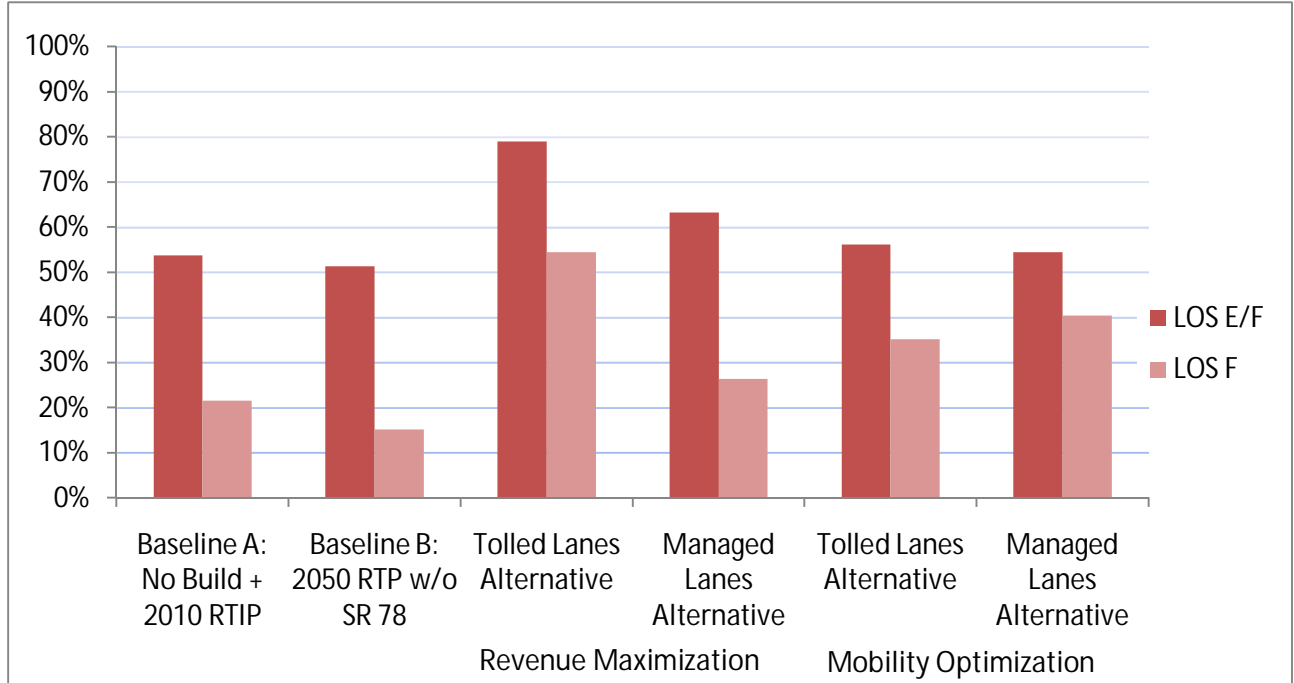
The mode shares in the study area for transit, HOV, and bicycle/pedestrian modes were analyzed for peak home-based work trips. As shown in Figure 8, the share of SOV travel would be highest in Baseline A, at 82.7%, and lowest in the Tolled Lanes alternative, at 81.4%. Because the differences in mode share among the alternatives were minimal, they were rated the same score of 3.

**Figure 8: Peak Period 2050 Home-Based Work Trips****Percent of SR 78 Congested**

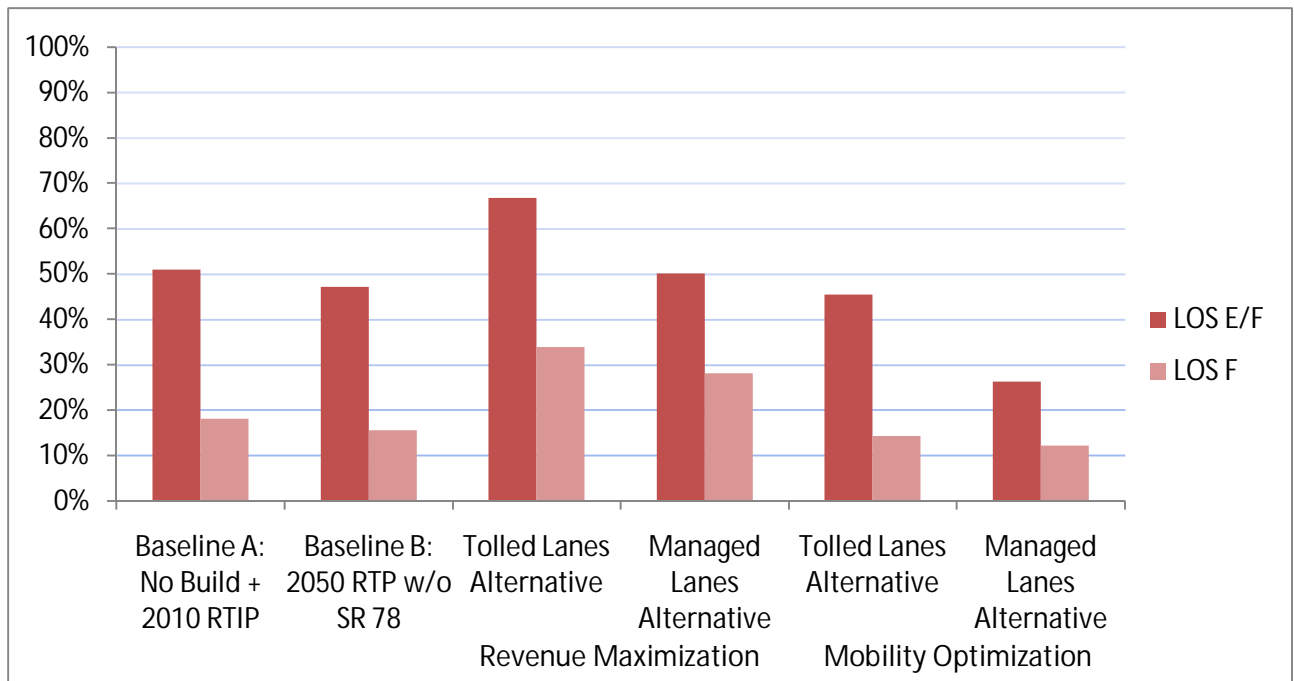
The percent of congestion in the GP lanes was evaluated in the peak period, peak direction. These results are summarized in Figure 9 and Figure 10. Congestion in the Managed or Tolloed Lanes was not part of the evaluation as by design these lanes are not congested. Pricing of the lane is varied to ensure there is no congestion. Under a Revenue Maximization revenue objective, the build alternatives would see an increase in congestion in the GP lanes. In order to maximize revenue, the time discrepancy between the GP and Managed or Tolloed Lanes would need to be increased which would result in more congested GP lanes. Under Revenue Maximization, the Managed Lanes alternative would be less congested than the Tolloed Lanes alternative but GP lanes in both alternatives would be more congested than the no build alternative. As such, under Revenue Maximization, the Tolloed Lanes alternative was scored a 1 and the Managed Lanes alternative was scored a 2. In the Mobility Optimization scenarios, congestion would be similar to the no build alternatives with slightly less congestion in the Managed Lanes alternative. Because of this, under Mobility Optimization, the Tolloed Lanes alternative was scored a 3 and the Managed Lanes alternative was scored a 4.



**Figure 9: Percent of General Purpose Lanes in LOS E or F –  
2050 – Eastbound PM Peak - Oceanside to Escondido**



**Figure 10: Percent of General Purpose Lanes in LOS E or F -  
2050 – Westbound AM Peak - Oceanside to Escondido**



### Estimated Right-of-Way Needed

A rough order of magnitude of right-of-way necessary for each proposed alternative was estimated using the developed high-level project footprint and SanGIS parcel data. The estimate assumed the standard Caltrans cross section and no interchange impacts. While it is likely that there would be right-of-way impacts due to interchange reconfiguration, ramp configurations have yet to be designed and therefore the right-of-way required was impossible to estimate.

Impacts from the widening of the mainline and required relocation of existing frontage roads included potential full and partial takes. The build alternatives would have the same high-level footprint and therefore the same right-of-way needs. The range of 30-34 acres for the Managed or Tolloed Lanes, shown in Table 9, considered widening based on the existing centerline and potential revisions to the centerline to reduce impacts.

Based on the larger high-level footprint of the Managed or Tolloed Lanes alternatives, compared to the Baseline A impact of one acre (based on the footprint of improvements included in the 2010 RTIP), each were given a screening criteria score of 2.

**Table 9: Estimated Potential Right-of-Way Impacts**

	<b>Baseline A: No Build + RTP</b>	<b>Managed/Tolloed Lanes</b>
<b>Right-of-Way</b>	1 acre	30-34 acres

Source: SanGIS, September 2010

### Potential Impact on Sensitive Environments

The potential impact on sensitive environments includes the estimated impact on wetlands, streams, and lagoons for each alternative. The estimate assumed a standard Caltrans cross section and no interchange impacts, and the impacts included required relocations of frontage roads and existing ramp configurations. Identical in methodology to the right-of-way impacts, the build alternatives would have the same high-level footprint and therefore the same impacts on sensitive environments. The ranges would encompass impacts based on the widening with the existing centerline and potential shifts to the centerline to reduce right-of-way and sensitive environment impacts. As shown in Table 10, the Managed or Tolloed Lanes could have an impact of 4 to 10 acres of sensitive environments and 1,900 to 4,340 linear feet of contact with rivers compared to 0.5 acres and 600 feet in Baseline A. Based on the build alternatives' greater impact on sensitive environments, they each received a screening criteria score of 2.

**Table 10: Estimated Potential Sensitive Environments Impact**

	<b>Baseline A: No Build + RTP</b>	<b>Managed/Tolloed Lanes</b>
<b>Sensitive Environments</b>	0.5 acres	4 - 10 acres
<b>Linear Feet of Contact with Rivers</b>	600 feet	1,900 - 4,340 feet

Sources: National Wetlands Inventory, US Fish and Wildlife Service, January 2010; SanGIS, September 2004; SanGIS, July 2006

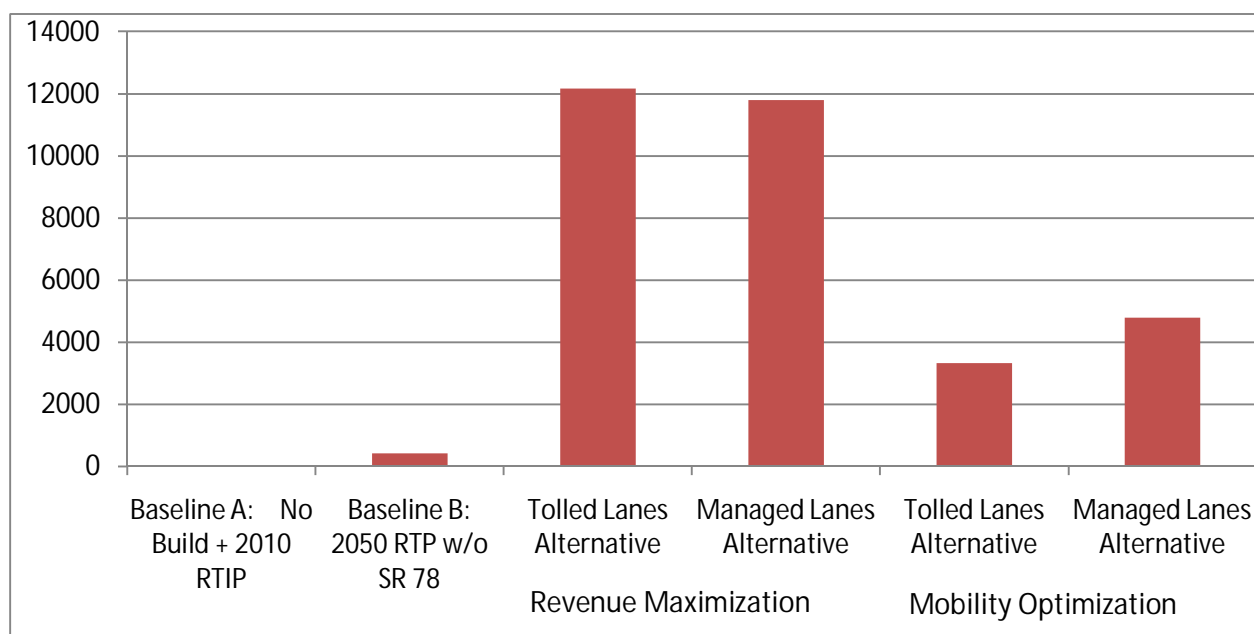
### Person Hours Saved

The estimated person hours traveled on the SR 78 Corridor in Baseline A, no build with 2010 RTIP improvements, is 70,000 person hours per day. Figure 11 presents the daily person hours saved compared to Baseline A. All the build alternatives would reduce person hours traveled. As shown in Figure 11, the pricing strategy would substantially affect the amount of person hours saved. The Managed Lanes and Tolloed Lanes alternatives in the Revenue Maximization scenario each would save about 12,000 person hours, or about a 17% reduction. In contrast, in the Mobility Optimization scenario, Tolloed Lanes would save 3,000 person hours and Managed Lanes would save about 5,000 person hours, or a 5- and 7-percent reduction, respectively.

The alternatives would reduce person hours traveled more substantially under Revenue Maximization because the Managed and Tolloed Lanes were priced so that there would be a larger difference in speeds between the Managed/Tolloed Lanes and the GP lanes. The higher person-hours saved under Revenue Maximization would result from the relatively higher travel time savings by the users in the Managed and Tolloed Lanes over the Mobility Optimization scenario. While there would be fewer users of the Managed or Tolloed Lanes in the Revenue Maximization Scenario, the significant amount of time they would save more than compensates for other users who would have slightly longer travel times in the GP lanes. Additionally, higher vehicle occupancies in the Managed and Tolloed Lanes would lead to relatively higher person hours saved.

Because the Managed and Tolloed Lanes under the Revenue Maximization scenario would substantially reduce person hours, they each received a score of 5, compared with the alternatives under the Mobility Optimization scenario, which received a score of 4.

**Figure 11: 2050 Daily Person Hours Saved on SR 78 Corridor**



Note: Compared to a Baseline A: No Build +2010 RTIP of 70,000 person hours per day

### **Cost-Effectiveness**

Cost-effectiveness was considered qualitatively as the proportion of rough order of magnitude costs divided by estimated person hours saved. Because the cost of the Managed and Tolled Lanes alternatives would be the same, the only difference between them would be the denominator: person hours saved. The Managed and Tolled Lanes alternatives would have a higher person hours saved under the Revenue Maximization scenario than under Mobility Optimization. Therefore, the cost-effectiveness of both build alternatives was 4 under the Revenue Maximization scenario and 3 under the Mobility Optimization scenario.

## **7.3 Comparing 2020, 2035, and 2050**

The alternative and scenario combinations perform slightly differently in each of the horizon years because of policy changes that are planned through 2050. In 2035, the HOV policy allowing two or more occupants (HOV2+) would change to allowing three or more occupants (HOV3+). Moreover, the Tolled Lanes alternative would provide express bus service on SR 78 in the 2020 phase in order to provide enhanced mobility alternatives in the corridor rather than paying a toll. However, this service would be discontinued by 2035, when increased SPRINTER service will be in place. In addition, I-15/SR 78 HOV connectors are planned for 2020, and I-5/SR 78 HOV and freeway connectors are planned for 2035. All of these changes would impact corridor performance at different time periods. The screening criteria evaluation is based on performance in the year 2050, when the planned improvements in the 2050 RTP are fully built out.

## **7.4 Results**

The screening analysis results are presented in the evaluation matrix in Figure 12 to summarize the relative merits of each alternative in each scenario. This matrix compares the build alternatives to Baseline A.

Based on this screening criteria analysis, the Managed Lanes alternative under the Mobility Optimization scenario performs the best. When compared to Baseline B, the build alternatives perform similarly, except that the Managed Lanes alternative under Revenue Maximization ranks second in performance, followed by the Tolled Lanes alternative under Mobility Optimization. However, the differences in performance among the alternatives compared to the two baselines are not substantial.

**Figure 12: Screening Criteria Matrix Compared to Baseline A - Weighted**

<div> <div>5</div> <div>4</div> <div>3</div> <div>2</div> <div>1</div> </div> <div> <div>←</div> <div>More Effective</div> <div>Less Effective</div> <div>→</div> </div> <div>(compared to Baseline A)</div>		Revenue Maximization		Mobility Optimization	
Screening Criteria		Tolled Lanes Alternative	Managed Lanes Alternative	Tolled Lanes Alternative	Managed Lanes Alternative
1	Travel Times (SOV/HOV/Transit)	3	3	4	4
2	Arterial Level of Service	4	4	4	4
3	Safety	5	5	5	5
4	Improvement to Transit and HOV Mobility	3	5	4	5
5	Mode Shares (Transit/HOV/Bike/Ped)	3	3	3	3
6	Percent of SR 78 Congested	1	2	3	4
7	Right-of-Way	2	2	2	2
8	Sensitive Environments	2	2	2	2
9	Person Hours Saved	5	5	4	4
10	Cost-Effectiveness	4	4	3	3
Alternative Strategy Summary (Average of Each Measure with double weight given to measures 1 - Travel Times, 6 - Percent of SR 78 Congested, and 9 - Person Hours Saved)		4.1	4.5	4.5	4.8

## 8.0 FINANCIAL FEASIBILITY

The SANDAG 2050 RTP includes the addition of two Managed Lanes on SR 78. The implementation of Tolloed Lanes as an alternative to Managed Lanes could provide a tool for project implementation if anticipated sources of project funding became constrained. Net toll revenues could potentially be applied against the capital cost of project development. The SANDAG 2050 RTP assumed that *TransNet* sales tax revenues would contribute approximately fifty percent of the SR 78 project's capital costs. The rest of the funds would come from a variety of state and federal funding programs. Tolloed Lanes were investigated as a way to potentially fill funding gaps if available state and federal funds were insufficient. The following analysis developed an estimate for the potential capital funding contribution from Tolloed Lanes.

In order to evaluate the potential funding contribution from the implementation of Tolloed Lanes, revenues were estimated based on travel demand and toll forecasts. Net revenue made available for financing must account for the operations and maintenance costs of a Tolloed Lane. The estimation of net revenues for the SR 78 Tolloed Lanes approximates the funding contribution from tolls that could support toll revenue bonds. Included in this analysis is a review of the process used to determine funding capacity and the major assumptions driving those results.

### 8.1 Revenue Forecasting Methodology and Assumptions

The process for estimating revenues for the SR 78 Tolloed Lanes can be organized into three distinct steps:

1. Review and incorporate traffic forecasts;
2. Annualize toll revenues, interpolate/extrapolate them over the financing horizon, and make appropriate operations and maintenance deductions; and
3. Apply financing assumptions to a simple financial model to determine a funding contribution range.

The following sections of this report will review the underlying assumptions for estimating SR 78 revenues, and document those results using the above three steps as a framework.

#### 8.1.1 Traffic Forecasts

To estimate revenue projections for the project, first the traffic forecasts for the Tolloed Lanes were developed. SANDAG generated travel demand model runs for the alternatives at the three planning and phasing horizons—2020, 2035 and 2050—which were then post-processed using ECONorthwest's RapidTOM tool, as described in Section 3.2. In order to capture a feasible range of revenues, the pricing strategy and value of time input assumptions were varied.

#### Pricing Strategy Assumptions

The modeling optimization can be performed under a variety of objectives. Two potential pricing strategies were used to estimate preliminary traffic, toll, and revenue forecasts. These pricing strategies have different objectives that represent the extremes of tolling pricing strategies, providing the full spectrum of traffic and revenue outcomes for the corridor:

- **Toll Revenue Maximization** - this scenario has a goal of maximizing the revenue produced by the Managed or Tolloed Lanes.

- **Mobility Optimization** - this scenario minimizes aggregate travel time cost for all users across both the GP and Managed or Tolloed Lanes.

### **Value of Time Assumptions**

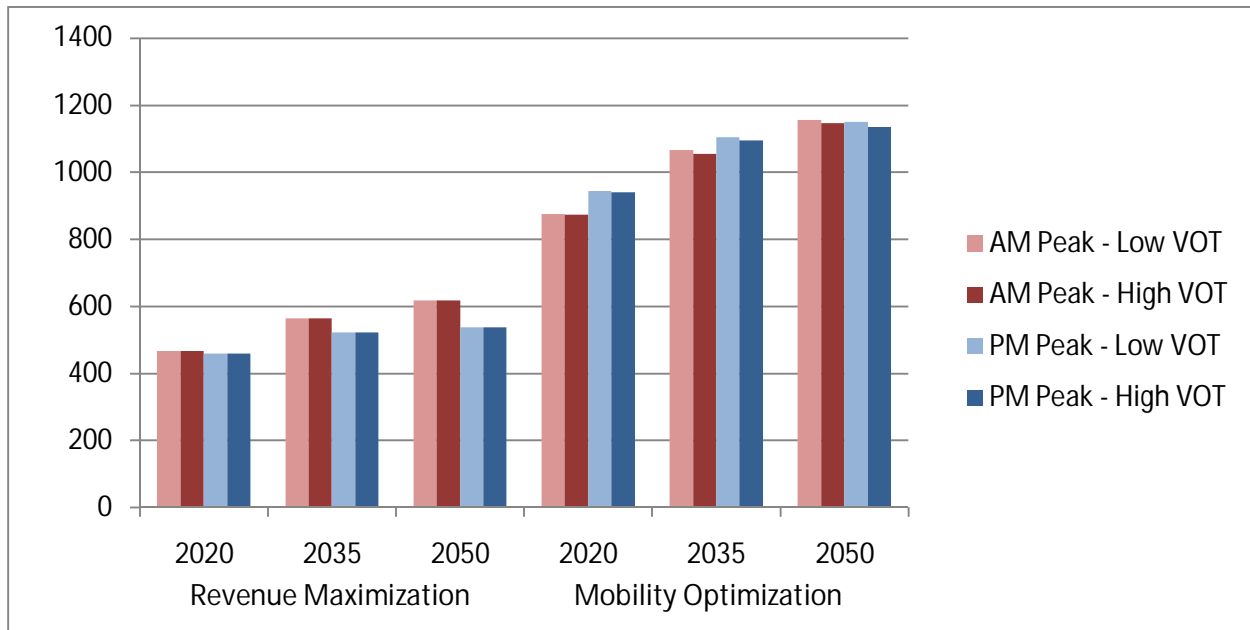
The assumed value of time for this financial analysis significantly impacts revenue projections. A more refined revenue estimate would require a corridor- and facility-specific value of time to be developed through a survey of current and potential facility users. Values of time vary significantly based on the profiles of facility users. In order to account for this in the financing analysis, a higher and lower bound for value of time assumptions were used to develop a range of financial estimates.

The lower value of time assumption is the same as the assumption used for the traffic forecasts in Section 3.4. Reasoning for this value of \$8.56 per hour was discussed in Section 3.4. While this lower value of time was used for the traffic analysis, a higher value of time would not change the projected traffic conditions summarized in Section 7.2. Because all users would have a higher value of time, the number of users in the Tolloed Lanes and GP lanes would remain nearly the same. Tolls would increase corresponding to value of time. Even though the travelers in the GP lanes would have a higher value of time, the distribution of values of time among all travelers would remain the same and additional travel would not shift into the Tolloed Lanes.

The higher value of time assumption accounted for the fact that users of a Tolloed Lane may have a higher value of time than the average corridor users. This is not necessarily related to higher incomes but instead to how every individual values their time in a particular situation. For example, travelers could value their time more when they need to pick a child up from daycare, get to an airport to catch a flight, or arrive at work on time. Research on similar facilities has shown that the majority of users do not travel on them regularly. This higher value of time finding was based on studies of Managed Lanes facilities in Southern California. One study surveyed travelers on the I-15 Express Lanes in San Diego and estimated value of time was \$30 per hour during the morning peak period in 1998 (Brownstone et al., 2002). Another study of the SR 91 Managed Lanes in Orange County found peak period commuters have a value of time of approximately \$13 to \$16 per hour (Sullivan, 2000). In light of this research, an upper-bound value of time was developed by doubling the lower value of time assumption, resulting in a higher value of time estimate of \$17.12 per hour.

### **Average Toll-Paying Volume Results**

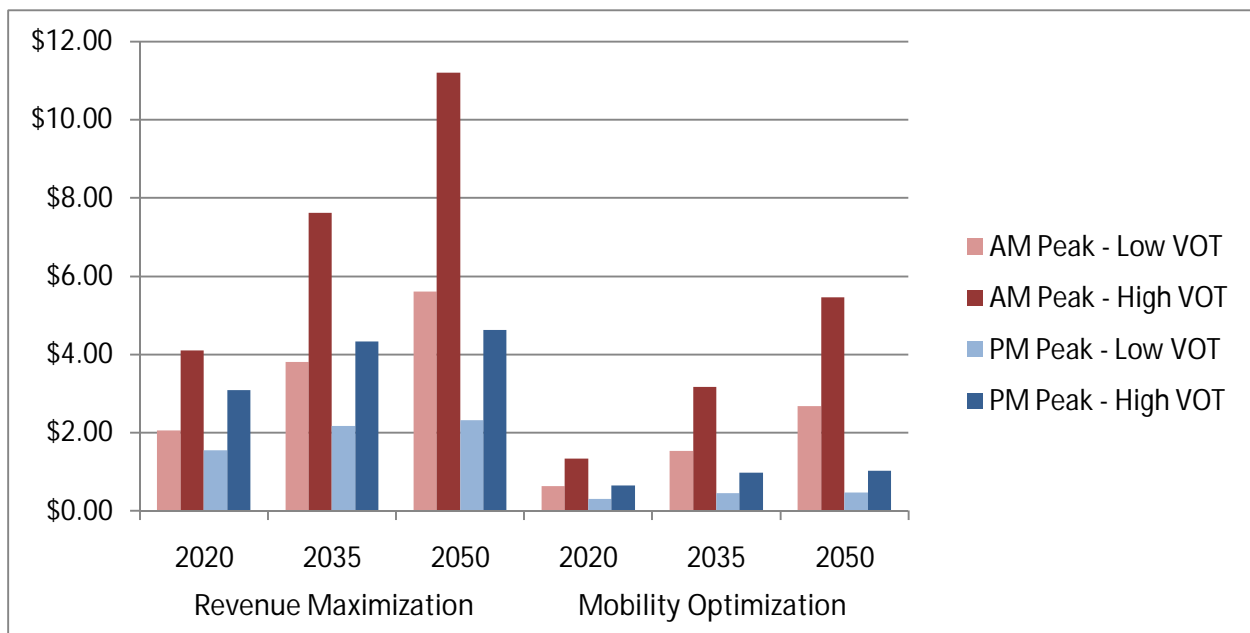
For the Tolloed Lanes alternative, all modeled users of the alternative were assumed to be toll-paying. Average hourly volumes on the corridor by time of day, direction and segment were the same as the volumes used for the traffic analysis. Figure 13 displays the average volumes for the entire corridor westbound between Escondido and Oceanside. As the values of time of all users double, and the distribution of values of time remain the same, the volumes between the low and high values of time essentially remain the same. As discussed in the screening analysis in Section 7.2, the volumes are lower under Revenue Maximization because fewer users are willing to pay a higher toll.

**Figure 13: Average Hourly Toll-Paying Volumes - Escondido to Oceanside - Westbound**

Note: VOT = Value of Time

### Average Tolls Results

Average tolls were calculated on a per mile basis for the corridor and across different times of day. Average tolls for the entire corridor westbound between Escondido and Oceanside are shown in Figure 14. Average tolls are nearly linearly related to value of time. As the higher value of time is double the lower value of time, the tolls for the two different assumptions are similarly related.

**Figure 14: Average Toll - Escondido to Oceanside - Westbound**

Note: VOT = Value of Time



### 8.1.2 Annualized Toll Revenues and Operations and Maintenance Deductions

Hourly volumes by segment per hour and toll rates per mile were converted to annual gross revenue by applying the following assumptions.

- **Weekend tolling** - Since the travel demand model only produces traffic volumes for weekdays, assumptions were made about the weekend and holiday traffic and revenue potential. Based on experience with other similar facilities, revenue for weekends was approximated to be 40% of the average weekday revenue. The weekend volume was estimated to be 80% of the average weekday volume. The volume is higher than the revenue because volume and congestion (which is a proxy for revenue) are not linearly related.
- **Annualization** - It was assumed that there would be 255 weekdays and 110 weekend days and holidays per year.
- **Peak tolls** - Because of the low rate of off-peak tolls, only peak hour tolls were included in the annualized revenues.

After projecting annual revenue for low and high values of time and different pricing scenarios, net toll revenues were estimated by accounting for operating and maintenance and other costs. The following deductions were made from the gross toll revenue potential to yield the net revenues available to support financing on an annual basis, based on the experience of SANDAG operating the I-15 Express Lanes and information derived from other Managed and Tolloed Lane facility operations:

- **Highway operating and maintenance costs** were based on SR 78 operations and maintenance costs defined in the SANDAG 2050 RTP of \$5,000 (2011\$) per lane mile. These costs included roadway maintenance related to flexible pavement, drainage, cleaning, and other standard roadway maintenance activities performed by Caltrans. It was assumed that there would be 34 lane miles: 1 lane in each direction for the 17-mile long corridor. This results in an annual cost of \$170,000 (2011\$).
- **Enforcement and tolling equipment utilities costs** were based on costs from I-15 and a survey of comparable systems performed to develop operations and maintenance costs for the Bay Area Regional Express Lanes Network. An assumed cost of \$100,000 per year (2011\$) was applied.
- **Toll collection backend operating costs** were estimated based on current operating costs on I-15. A range of operating costs of \$0.80 - \$1.00 per trip (2011\$) was analyzed to account for potential economies of scale associated with adding an additional Tolloed or Managed Lanes facility to the region. These costs include toll processing, technical services, telecommunications, administration, marketing, transaction costs, banking fees, credit card fees, and violation enforcement processing.
- **Toll collection equipment maintenance costs** were based on current maintenance contracts for tolling equipment on I-15. Maintenance costs were estimated at \$230,400 per year, assuming 4 variable tolling message signs and 4 tolling locations provided in each direction.

- **All operations and maintenance costs** were escalated by 2.5% per year to account for inflation and/or by transactions or toll trips as relevant to the measurement of these cost components.
- **Toll rates** were escalated by 2.5% per year to account for inflation.
- **Revenue leakage or uncollectable tolls** were assumed as a revenue deduction. This includes toll violation or tolls that are not paid as well as any potential toll-payers that are exempt from paying tolls, such as enforcement and emergency vehicles. Rates were assumed to be 15% for Managed Lanes and 10% for Tolloed Lanes. A higher rate was expected for Managed Lanes because enforcement is more complex for this alternative due to HOVs being exempt from paying tolls.
- **Ramp-up factor assumptions** were used in the first two years of operations, as it is expected that potential users may need to obtain a FasTrak transponder and become comfortable with how to use the facility. Year one of operations assumes 85% of the forecasted users and year two assumes 95%. Years following will include 100% of forecasted users.

## 8.2 Net Toll Revenue Projections

Based on these assumptions, annual net revenue projections for the Tolloed Lane alternative were developed using sensitivity analysis to consider the different pricing strategies, values of time, and operations and maintenance costs.

Based on this sensitivity analysis, it is clear that certain assumptions in the revenue analysis significantly impact the feasibility of Tolloed Lanes to provide positive revenues that could potentially offset project capital costs. Some scenarios have negative net revenues in the early years of operation or throughout the study period, because operations and maintenance costs exceed projected gross revenues. Even those scenarios that are generally net revenue positive take a while to build to higher revenue production levels. Low revenues can limit the potential for financing. The scenarios that produce revenue immediately and have high rates of growth are those with the Revenue Maximization pricing strategy and a high value of time, either with low or high operations and maintenance costs. As such, the potential toll funding contribution from the assumptions of a Revenue Maximization pricing strategy and a high value of time was developed. For simplicity, only the scenario with the lower operations and maintenance costs was analyzed for financing.

## 8.3 Financing Assumptions

In order to evaluate the potential funding contribution of the Tolloed Lanes alternative with a Revenue Maximization pricing scenario, financing assumptions appropriate to the relative predictability and uncertainty of the revenue stream were established. While Managed and Toll Lane projects may have a sound traffic base to build upon, their demand tends to be more volatile than typical toll roads. Small changes in the volumes on the adjacent, free GP lanes can lead to large swings in travel times, and thus, the time savings of the Tolloed Lanes. As the dynamic toll changes to adjust to this volatility, so too does the revenue. Revenue volatility, combined with the limited market experience with Managed Lanes financing, necessitates the use of conservative financing assumptions relative to those that would be employed for a more typical toll road.

While there are many questions yet to be answered about how this project could be financed, a reasonably conservative set of assumptions were developed to provide an indicative range of the potential toll funding contribution. The low and high end assumptions were applied to the Tolloed Lanes alternative with Revenue Maximizing pricing and the higher value of time assumption, as this alternative is the only one that would likely be able to support a toll revenue bond financing.

The low and high end financial analysis assumptions shared many of the same assumptions. Both assumed that tolls are the only revenue source pledged to repay debt; there was no additional backing from SANDAG via their taxing authority. Moreover, this was a net revenue pledge such that facility and toll collection operations and maintenance costs must first be paid from gross toll revenues ahead of debt service. However, periodic rehabilitation and replacement (R&R) costs would be paid after debt service from excess toll revenues. Both sets of financial assumptions took the forward looking view that future interest rates will be modestly higher than both current rates as well as the average rates over the past 10 years, while also considering that investor demand for bonds backed by revenues from dynamically priced facilities will improve slightly as more such deals occur. In addition, both assumed that the maximum maturity for the bonds sold will be 30 years, with proceeds available in 2018. A minimum of four and a maximum of five years of capitalized interest were also assumed in both cases. Interest on bonds issued for construction is often “capitalized” whereby some of the bond proceeds are set aside to pay interest costs during construction and/or in the initial years of operation until ramp-up effects have ended and the revenue stream has stabilized.

The low end of the funding range assumed a single tier of senior bonds with maturities of up to 30 years, an average interest cost of 8.0%, and net toll revenues providing coverage of 2.0 times annual debt service (200%). A debt service coverage ratio of 2.0 indicates that the facility is expected to generate annual net toll revenues that are 2.0 times the annual debt payments. This rather high debt service coverage ratio of 2.0 provides greater assurance to the lender that the debtor, SANDAG, will be able to meet their payments. This high debt service coverage ratio is less risky (compared to the low ratio assumed for the high end of the funding range), and accordingly provides a lower amount of funding.

The high end of the funding range also assumed a maximum maturity of 30 years, but added a second tier of subordinated (junior) bonds that bring the aggregate debt service coverage provided by net toll revenues down to 1.6 times annual debt service (160%). In addition, the high end assumed slightly lower interest rates on the senior debt; however the junior debt would have higher interest rates in order to attract investors due to the higher risk of being second in line for repayment. Overall, the average interest cost for the high case was nearly the same as in the low case. The lower debt service coverage ratio of 1.6 is more risky, and thus provides a greater amount of funding.

## 8.4 Financial Capacity Analysis

Based on all of the previously noted assumptions and the preliminary financial analysis, the only Tolloed Lanes scenario that would support financing would be Revenue Maximization with the higher value of time assumption. As mentioned above, for simplicity, the scenario with the lower operations and maintenance costs was analyzed. The financial analysis conducted indicates

that this alternative could support a range of up front construction funding of between \$50 and \$70 million.

The actual amount borrowed in the high case would be about \$86 million which yields about \$70 million for construction after paying for the cost of issuance and capitalized interest during construction and operations ramp-up.

Only one set of pricing and value of time assumptions could result in a material funding contribution from leveraging Toll Lane revenues and the amount of this capital contribution would be relatively small compared to the overall capital cost of implementation, which is estimated to be between \$917 and \$1,109 million. Based on this analysis, it does not seem that the selection of the Tolled Lanes alternative would be a way to ensure timely project implementation in the face of a funding shortfall.

## 9.0 IMPLEMENTATION

The SR 78 Corridor Study is just an initial step in implementing the SR 78 Corridor Project. The project development process contains many phases which will follow the completion of this report. These stages will expand upon the conceptual engineering and impacts analysis done for this study. As part of this, methods for project delivery and potential project phasing will be considered.

### 9.1 Project Development Process

The Caltrans project development process regulates the development of a project from feasibility studies through project completion. Figure 15 highlights key steps in the process. This process reflects a traditional design-bid-build project delivery; an alternate delivery method may merge or change some of the steps in the process.

Following the completion of the SR 78 Corridor Study, the first step of the process would be the preparation of the Project Study Report (PSR) which would include scoping of the physical work, budget, and schedule to deliver the project. The need and purpose of the project would be defined and the full range of possible project alternatives, including avoidance alternatives, would be identified. The viable alternatives would be studied in detail and documented in the PSR. Caltrans anticipates starting this work for SR 78 in the 2013 fiscal year, which begins July 1, 2012.

The next step would be the preparation of the Draft Project Report (PR), which is an engineering report that describes the scope of the work and considers alternatives. It provides a greater level of detail than the PSR so that areas of potential effects can be identified. This step would occur concurrently with the development of the Environmental Document (ED), which includes environmental studies. The goal of the ED is to find the least environmentally-damaging alternative that fulfills the need and purpose. When the environmental studies are complete, the Draft PR would be finalized and approved and the draft ED would be circulated to the public. After completion of public comments and a public hearing, a preferred alternative would be selected and a final ED would be completed.

Through the PSR, PR and ED processes, a range of issues will be investigated and potential impacts identified. These are anticipated to include:

- Analysis of corridor trip origins and destinations to better understand travel markets which could impact the viability and operations of various alternatives
- Potential modifications to corridor interchanges
- Pricing strategies at freeway-to-freeway junctions
- Operational analysis to identify opportunities for operational improvements and phasing scenarios
- Refined geometric design of SR 78, corridor interchanges and affected frontage roads to determine parcel specific impacts to residents and businesses.

By selecting a preferred alternative, the completion of the PR would authorize project approval. The National Environmental Policy Act and California Environmental Quality Act require review of environmental impacts caused by projects which would likely trigger the need to prepare an Environmental Impact Statement and Environmental Impact Report, respectively. The

environmentally preferred alternative would be identified in a Record of Decision published in the Federal Register.

Following the project approval and selection of a preferred alternative, the project would enter Final Design (preparation of plans, specifications, and estimates (PS&E)). Design details, plans, quantity calculations and contract specifications would be developed. Reevaluation should be conducted to ensure the project remains within the framework of the project approval document. Concurrent with Final Design would be the acquisition of right-of-way and obtaining approvals, agreements, and permits.

Once the design work is complete, the final project documents and bid package would be assembled so the project can be advertised. After bids have been submitted, they would be reviewed, a contractor would be selected, and the construction contract would be awarded. Finally, construction would commence.

**Figure 15: Project Development Process**



## 9.2 Project Delivery Methods

At this point in the project development process, it is inappropriate to select a project delivery method. However, multiple methods will be considered for project delivery in future stages of project development, each of which has benefits and drawbacks. These methods are described in the following sections.

### **Design-Bid-Build**

Design-Bid-Build is the traditional delivery strategy as outlined in Section 9.1. Caltrans, or engineers acting on their behalf, would develop a complete design and detailed specifications. This design would be put out to contractors for bid with construction being performed by the

lowest bidder. A Request for Qualifications could be used to develop a short list to pre-qualify bidders and ensure that a contractor with a record of proven performance is selected.

This delivery method is well understood by Caltrans, SANDAG, potential design consultants, and the contractor community. Caltrans and SANDAG would maintain full control of the design process through Final Design. However, Caltrans and SANDAG would rely only on a traditional professional services team to provide input during the design phase for constructability reviews, value engineering, cost estimating, and project scheduling. Eventually when a contractor is chosen, their understanding of the design would be based entirely on their review of the construction documents.

### **Design-Build**

For the Design-Build approach, Caltrans would complete preliminary engineering and after that a contractor would be selected with responsibility for Final Design and construction. The contractor would assume full responsibility for the Final Design, including any errors and omissions due to their design consultant's work thereby transferring this risk from Caltrans and SANDAG to the contractor team. The language of the Design-Build contract would define the degree of involvement by Caltrans and SANDAG during the Final Design and construction phases of the project, but in general, their roles are more limited. There would be potential to reduce the project schedule by overlapping some design and construction activities. The designer-contractor team would have an incentive to consider the constructability of the design and look for value engineering opportunities which can reduce the overall project cost. The Final Design schedule and project budget would be optimized and realistic because they would be developed in conjunction with the contractor.

This approach is less common and therefore Caltrans, SANDAG, and other stakeholders are less familiar with it. This could result in decision making and approval delays that may outweigh other schedule benefits. Caltrans and SANDAG would have less control over the project design. Clear definition of scope, design criteria, contract conditions and performance specifications would be essential to ensure later cost increases would not be required and to avoid sacrifices in project quality. While Design-Build has the potential to transfer risk from Caltrans and SANDAG, the benefits would be reduced the more they are involved with the design development.

Additionally, the current legislation that permits Design-Build requires California Transportation Commission (CTC) authorization and sunsets January 1, 2014. The program authorizes a pilot program of the Design-Build method of procurement by local transportation entities for up to five projects and by Caltrans for up to ten projects, subject to authorization by the CTC. As the number of projects allowed under the program is limited, and the SR 78 Project Final Design phase will not likely start by that time, the potential to use the Design-Build strategy is unclear.

### **Construction Management/General Contracting**

In the Construction Management/General Contracting (CMGC) or Construction Manager (CM)-at-Risk approach, a contractor is selected to provide both pre-construction and construction services. This allows Caltrans and SANDAG to maintain control over design while gaining valuable input from the construction contractor who will eventually build the job. Selection of the contractor is based on qualifications. Pre-construction work consists of providing input from the perspective of a contractor into the Final Design. This may maximize opportunities for value engineering, constructability review, technical compatibility, as well as contractor-produced cost

and schedule projections. At the end of Final Design, the contractor would offer a guaranteed maximum price for some or all of the construction work based on earlier agreed upon terms. The Final Design engineer would be a separate entity from the contractor.

With this approach, Caltrans and SANDAG would maintain control of Final Design and would establish contract provisions for construction while obtaining some of the benefits of a more integrated project delivery approach. While a contractor would be selected ahead of the traditional bid process, competitive pricing can still be obtained through low bid subcontracts and open-book estimating and contracting between the contractor and Caltrans and SANDAG. Risk of claims could be reduced because of early contractor involvement. A team developed during the design phase could result in a more collaborative working relationship through construction.

Because CMGC pre-selects a contractor ahead of a traditional bid, an exemption from the low-bid process would have to be justified at a public hearing. Similarly, Caltrans and SANDAG may have less leverage with the contractor when pricing construction beyond the CMGC agreement and open-book pricing provisions. If Caltrans and SANDAG were not able to negotiate a guaranteed maximum price with the selected contractor, the project could still be completed under the traditional design-bid-build process.

While CMGC is not a delivery method that is currently being utilized on Caltrans projects, SANDAG and Caltrans both have legislation pending that could make it feasible by the time the project development process for the SR 78 Project progresses to this level.

### **Design-Sequencing**

Design-sequencing is a method of contracting that enables the sequencing of design activities to permit each construction phase to commence when design for that phase is complete, instead of requiring design for the entire project to be completed before beginning construction. A construction contract would be awarded when only the initial phase is completely designed and the design for remaining phases is partially complete. Sequencing of design could occur through all three delivery methods previously defined. For Design-Bid-Build, contracts could be bid as design is completed. A Design-Build contractor would likely utilize design sequencing. For CMGC, contract packages could be released as design is completed.

This process allows for the successful contractor to work with the designers to incorporate innovative designs and construction methods on the still in-progress phases to improve delivery. With design-sequencing, there would be a potential for earlier delivery of the project to the public.

Caltrans recommends that projects be considered for design sequencing if they have minimal public controversy, have a completed environmental document, an approved project report, right-of-way acquisition complete, utility conflicts identified, and full project funding in place. Design sequencing has been utilized on the I-15 and SR 76 projects in San Diego County.

## **9.3 Project Phasing Strategies**

While the SANDAG 2050 RTP includes the implementation of the entire SR 78 Project by 2020 and does not consider phased implementation, project phasing could provide several advantages. Project funding may not all be available at the same time and phasing could allow for some elements or segments to be advanced when only initial funding is in place. Opening a



segment or elements of the facility earlier would allow for earlier congestion reduction and earlier revenue collection, which could potentially help fund the construction of remaining segments. While all construction on the corridor will be disruptive, limiting construction to a particular area could help to alleviate impacts. However, constructing the project over a longer period would result in prolonged construction impacts. SANDAG is planning a Managed Lanes network for the region; the I-15 Express Lanes are already in use. By constructing segments that connect to I-15 first, the region's contiguous Managed Lanes network could be expanded earlier.

### **Potential Phasing Strategies**

There are a variety of phasing strategies that could be implemented in the corridor including phasing by segment, by type of improvement, or a hybrid approach. The approach utilized in the corridor will depend on traffic analysis, constructability, and potential funding. These approaches are explained as follows.

#### Phasing by Segment

If the project were phased by segment, one geographical segment of the project would be constructed in advance of other areas in the corridor. This newly finished segment would then be opened while other pieces of the corridor would be undergoing construction. Phasing could be staged rapidly, with the next segment under construction before the previous is open, or spaced out, with breaks in corridor construction between phases. The number and length of phases would vary based on available funding, constructability review, and potential benefit to corridor congestion. This approach is currently being utilized in the region on SR 76. The West segment of that project is complete, the Middle segment is under construction, and the East segment is in Final Design.

In order to identify what segment would be the best candidate for earlier construction on SR 78, current and projected traffic data were analyzed. The Caltrans Performance Measurement System (PeMS) was used to analyze current (2011) average annual daily traffic volumes, which are measured by loop detectors on the freeway. This analysis showed that the highest volumes occur at Barham Drive. Projected corridor volumes for 2020 were also analyzed. The links close to the I-15 have some of the highest volumes for both the AM and PM peak hour. How volumes across the corridor vary indicate natural breaks for phasing.

Based on the 2011 and projected 2020 volumes, potential SR 78 segments for phased construction are listed in order below:

1. I-15 to San Marcos Boulevard
2. San Marcos Boulevard to Melrose Drive
3. Melrose Drive to I-5

The segment from I-15 to San Marcos Boulevard would be a good candidate for early construction because opening this segment for operation would address the higher level of congestion close to the I-15 first.

In addition to traffic conditions, there are operational considerations to take into account with respect to phasing. Starting phasing from the east and moving west would expand the Managed Lanes network earlier, connecting to the I-15/SR 78 HOV Connectors included in the 2020 phase of the 2050 RTP and the existing I-15 Express Lanes. Also, much advanced work has been accomplished, underway or planned to allow the I-15 to San Marcos Boulevard segment

to proceed relatively quickly. This includes the current addition of auxiliary lanes in this segment, the replacement of Nordahl Road Bridge to improve capacity and accommodate future SR 78 widening; the 60% design of the Woodland Parkway interchange; and completion of environmental, preliminary design, and permit processing for SR 78 widening from Twin Oaks Valley Road to San Marcos Boulevard.

If this approach were adopted, the San Marcos Boulevard to Melrose segment would be constructed next, and the Melrose to I-5 segment would be constructed last and would connect to the I-5/SR 78 HOV and freeway connectors included in the 2035 phase of the 2050 RTP. SANDAG and Caltrans are currently investigating potentially advancing the I-5/SR 78 connectors to better align implementation with SR 78, I-5 and Buena Vista Lagoon improvements.

If the phasing of the I-5 Express Lanes and connectors were revised in future RTPs, it could make sense to phase the east and west ends of the corridor first with the final phase connecting the two in the middle. However, with current 2050 RTP phasing this is not feasible as new SR 78 lanes would not have anywhere to connect to once they reach I-5 and could cause additional operational problems.

#### Phasing of Improvement Type/By Lanes

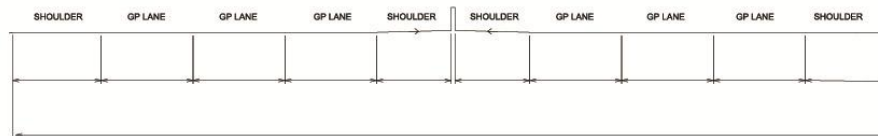
Because the 2050 RTP includes planned operational improvements, and Caltrans has identified additional operational improvements, another potential strategy would be to build auxiliary lanes and implement operational improvements before building the Managed or Tolled Lanes. This would allow for targeted congestion relief while postponing larger potential right-of-way and sensitive environment impacts. An example of this is illustrated in Figure 16. Between Woodland Parkway and Twin Oaks Valley Road there are currently three GP lanes in each direction (Existing in Figure). The final build alternatives include the addition of an Auxiliary Lane and a Managed or Tolled Lane in each direction (Final in Figure). In order to alleviate congestion in the short term, the auxiliary lane could be added with a limited increase in the cross section in this segment (Interim in Figure). The final build out would further expand the cross section and the GP lanes would be shifted outward to accommodate the Managed or Tolled Lane and buffer. Where the former Auxiliary Lane had been located would become a GP lane and a new Auxiliary Lane would need to be constructed.

**Figure 16: Woodland Parkway to Twin Oaks Valley Road Conceptual Cross Section**

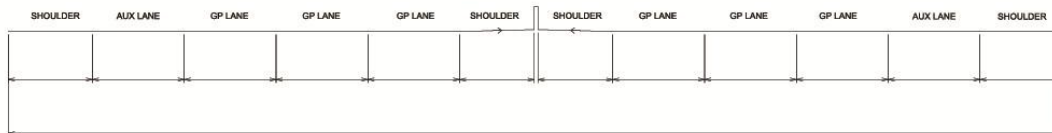
SR 78 Eastbound

SR 78 Westbound

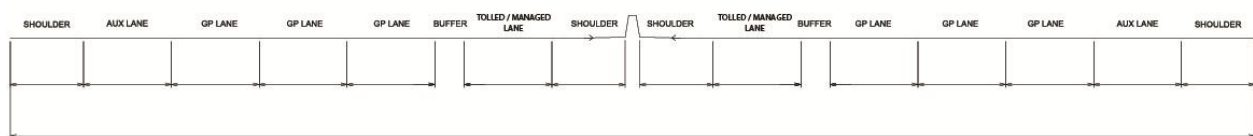
Existing



Interim



Final



Note: Aux = Auxiliary GP = General Purpose  
 Standard cross section dimensions provided in Appendix C

### Hybrid Approach

A hybrid approach would include the phasing of some parts of the corridor by segment and others by improvement type. A blended approach may best meet constructability, impact minimization, and financing requirements. This approach is what is currently being planned for the I-5 North Coast Corridor Managed Lanes project.

## 10.0 PUBLIC OUTREACH

### 10.1 Summary of Efforts

SANDAG staff led public outreach efforts to provide information about the project and gather input from the public about the SR 78 Corridor Study. The outreach effort provided an opportunity to gain a local perspective about the study relating to project elements, economic conditions, travel and trip characteristics, or any other observations. It also provided an opportunity to build consensus between residents, public participants, local jurisdictions, business communities, and others beyond the more focused coordination within the Technical Working Group.

The public outreach efforts included community outreach workshops in the cities of San Marcos and Oceanside on March 14 and 15, 2012, respectively. Meeting materials were available in English and Spanish and Spanish speaking staff attended both outreach meetings.

SANDAG staff gave a presentation at the beginning of the meetings followed by an open house format in which attendees could view more detailed boards on specific topics, pick-up fact sheets and other information, and discuss the alternatives with SANDAG, Caltrans, and NCTD staff, as well as the study consultants. The presentation and materials included the following:

- Contextual information, including the 2050 RTP and other corridor projects
- Background and explanation of Managed Lanes and Tolled Lanes facilities
- Concept maps to illustrate the potential improvements
- Project Development Process
- SR 78 Corridor Study Fact Sheet (English/Spanish)

Presentations were also made to the Interagency Technical Working Group on Tribal Transportation Issues, the San Diego North Economic Development Council Public Policy Committee, the SANDAG Transportation Committee, and the Vista Chamber of Commerce Government Affairs Committee. Additionally, SANDAG developed a webpage with information about the study and an online comment tool located at [www.sandag.org/sr78study](http://www.sandag.org/sr78study). The SANDAG and Caltrans project-specific website, *Keep San Diego Moving (KSDM)*, was also updated to include a cross reference link to the SANDAG project page.

Public outreach publicity included the aforementioned SANDAG website; notifications on the local jurisdictions and partner agencies' websites; flyers (in English and Spanish) distributed to stakeholder lists via email by the TWG members; SANDAG, and Caltrans; social media posts; and an advertisement in the *North County Times*. In addition, The *North County Times*, *The Daily Transcript*, and *San Diego Union Tribune* published articles before the community outreach meetings, identifying the meeting locations and times. The *North County Times* and NBC Channel 7 provided coverage of the workshop held in San Marcos.

The public comment period was open from early March 2012 to early April 2012. The comments received are summarized in the following section and are included in full, with responses in Appendix D.

## 10.2 Summary of Comments and Responses

The study received a total of 48 comments through public comment cards collected at the community outreach workshops, comment letters, e-mail, and online comments, with the majority of comments received through the online comment tool. The comments are summarized by topic below and included in full, with responses in Appendix D.

### **Support of Managed Lanes Alternative**

Several members of the public expressed their support for the Managed Lanes Alternative, citing satisfaction with the I-15 Express Lanes. Most expressed their preference for the Managed Lanes over Tolloed Lanes because Managed Lanes allow carpoolers to use the lanes for free. One comment noted the large number of students traveling and carpooling along the corridor.

### **Widen freeway, add General Purpose lanes**

Several comments expressed no support for either alternative, and some commenters suggested widening the freeway to add GP Lanes.

### **Improve interchanges at I-5 and I-15**

Several comments suggested improving the interchange at I-5/SR 78 and moving up the planned delivery of the connector. A few comments discussed the traffic on arterials that occur because of the lack of a ramp to I-5. A couple of comments also suggested widening the I-15/SR 78 connector.

### **Operational and safety improvements**

Several comments suggested operational improvements, such as additional auxiliary lanes and ramp improvements. Some expressed safety concerns over the ramps and interchanges and bottlenecks. A few suggested removing some of the existing ramps or exits.

### **No widening**

Several comments suggested that SR 78 should not be widened because it would increase traffic and pollution. These comments suggested converting an existing GP lane into an HOV lane, improving existing transit service, or improving frontage roads and parallel arterials.

### **Support of Tolloed Lanes Alternative**

A couple of comments expressed support for the Tolloed Lanes Alternative. One of these comments noted that there are more solo drivers than carpoolers, which would make Tolloed Lanes more effective at alleviating congestion.

### **Local improvements**

Comments were received from the Cities of Vista and Oceanside which encouraged coordination between SR 78 and local improvements going forward.

Several other comments were also received. These regarded the preservation of historic property along the corridor, concerns that the project is a form of double taxation, and that future construction impacts be minimized. Comments that focused on localized impacts or issues will be addressed in the next stages of the project development process.

## 11.0 CONCLUSION

The primary goal of this study was to evaluate the feasibility of Managed Lanes and Tolleed Lanes alternatives. Based on the study analysis, it is recommended that Managed Lanes on SR 78, as identified in the 2050 RTP, be studied further, instead of pursuing the Tolleed Lanes alternative. The conclusion of this study is supported by three main avenues that led to the recommendation of an alternative for further study – performance, financial feasibility, and public input. Using the screening criteria matrix developed by the TWG, the Managed Lanes alternative under the Mobility Optimization scenario scored the highest, considering a variety of mobility, environmental, and cost performance measures. The financial feasibility analysis found that revenue from Tolleed Lanes could provide only a marginal funding contribution to construction, thus the Tolleed Lanes alternative would not ensure timely project implementation in the face of a funding shortfall. In addition, comments received through public outreach efforts indicate a stronger preference for Managed Lanes over Tolleed Lanes. Managed Lanes as well as other potential alternatives will be studied by Caltrans as the Project Study Report for the corridor is advanced.

Therefore, the results of this study lead to a recommendation to advance the study of Managed Lanes on SR 78 as defined in the 2050 RTP.

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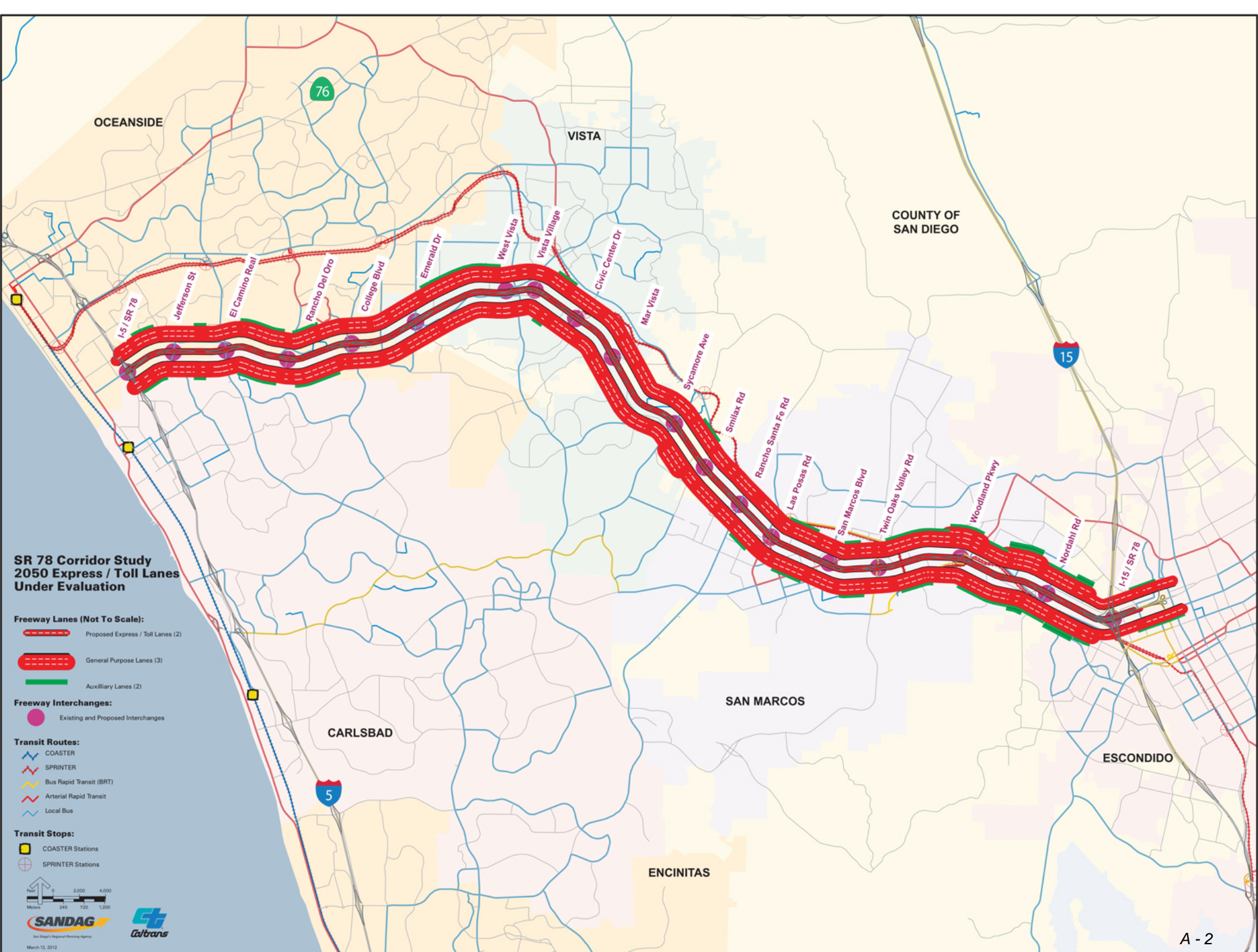
U.S. Census Bureau. 2010. City of San Marcos population data.



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# Appendix A

## SR 78 Corridor 2050 Managed and Tolloed Lanes Concept Map



**SR 78 Corridor Study  
2050 Express / Toll Lanes  
Under Evaluation**

**Freeway Lanes (Not To Scale):**

- Proposed Express / Toll Lanes (2)
- General Purpose Lanes (3)
- Auxiliary Lanes (2)

**Freeway Interchanges:**

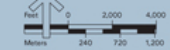
- Existing and Proposed Interchanges

**Transit Routes:**

- COASTER
- SPRINTER
- Bus Rapid Transit (BRT)
- Arterial Rapid Transit
- Local Bus

**Transit Stops:**

- COASTER Stations
- SPRINTER Stations



March 12, 2012

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## Appendix B

### Express, Toll, and HOV Lane Definitions

# SR 78 EXPRESS LANES

## What are Express Lanes?

- Offer transportation choices for commuters
- Carpools, vanpools, transit, emergency vehicles, motorcycles, and some zero-emission vehicles can use the Express Lanes for free
- Solo drivers with a valid FasTrak® account and a FasTrak transponder can choose to pay a toll to use the lanes



I-15, San Diego County



SR 91, Orange & Riverside Counties

## What are Toll Lanes?

- Provide the option to pay a toll to use faster, more reliable lanes
- Any users with a valid FasTrak account and a FasTrak transponder can pay to use these lanes
- Only transit and emergency vehicles are allowed free use



SR 125, San Diego County



SR 73, Orange County

## What are HOV Lanes?

- High-occupancy vehicle lanes or carpool lanes
- Each vehicle must carry a minimum number of people
- Usually at least 2 people, or in some cases 3 people
- Motorcycles can also travel in the lanes for free
- Some permitted zero-emission vehicles can travel in the lanes for free



I-5 (between Manchester Ave. and I-805, San Diego County

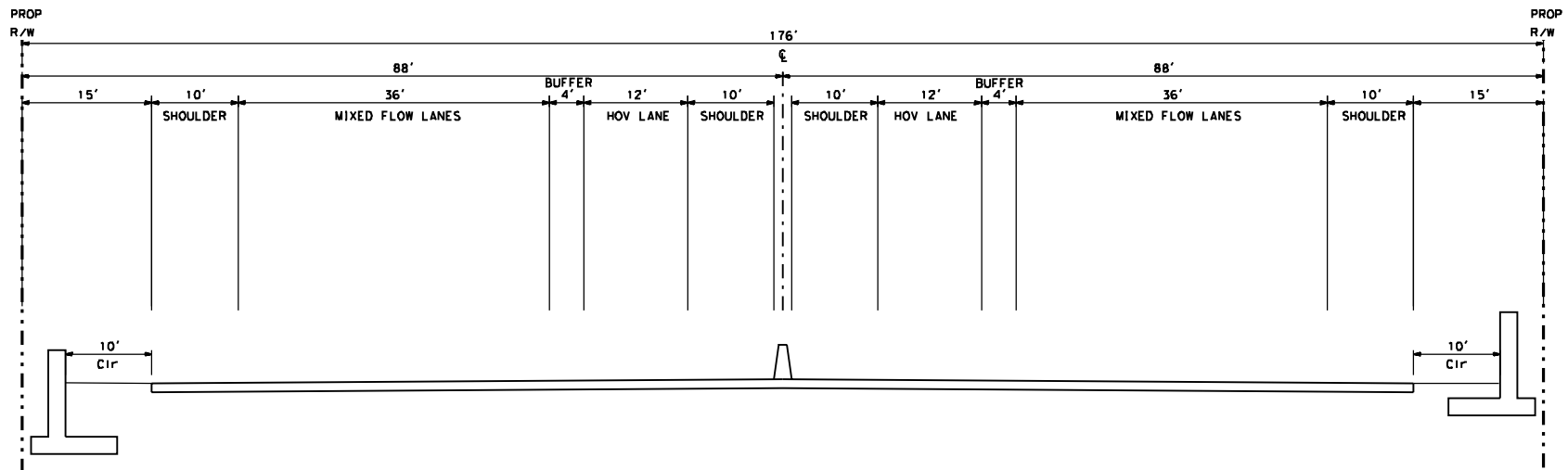


I-405, Orange County

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## Appendix C

### SR 78 Standard Cross Section



**BUFFER-SEPARATED HOV FACILITY**

NO.	DATE	REVISIONS	BY	CHK	APRV

**PB PARSONS BRINCKERHOFF**  
 401 B STREET, SUITE 1650 SAN DIEGO, CA 92101  
 TEL (619) 338-9376 FAX (619) 338-8123

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
SANDAG PRJ ENG	



San Diego Association of Governments  
 401 B STREET, SUITE 800, SAN DIEGO, CA 92101-4231 (619) 699-1900

**SR-78 CORRIDOR STUDY**

**TYPICAL CROSS SECTION**

SCALE	NTS
SANDAG CONTRACT NO.	
DRAWING NO.	SHEET NO.

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# Appendix D

## Public Outreach Comment and Response Matrix

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### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
1				Option 1 HOV/toll lane, I like this the best. I use the I-15 toll lane as a solo driver to work and carpool with family on weekends.	Thanks for your input on the alternatives evaluated.	Online	2/27/2012
2		Delgado	Gloria	I have been traveling on SR 78 for 10 Years from Barham to Melrose in the morning and from Melrose to Barham in the afternoon. Traffic is congested going West from Nordahl to Barham in the morning rush hour traffic and East from Rancho Santa Fe to the 15 connector in the afternoon rush hour traffic from 3pm to 6 pm. I have been rear ended twice and spent almost 40 minutes on afternoon traffic to get home from Vista to the Barham exit. Over the years traffic has grown tremendously and so have the accidents. It is difficult to plan any activities around this time since for me it's impossible to get home in the afternoon. The quality of life of travelers is directly affected by traffic congestion. I had to drop classes from college since I could never make it on time even when leaving work an hour early. I have been e-mailing Caltrans for years and finally it seems that something is being done. There is a project to add an express lane from Woodland to Nordahl, however the traffic begins at Rancho Santa Fe three exits before Woodland. Why are lanes not been added in the needed areas? Those of us who drive on the SR 78 know that traffic lanes need to be added from Rancho Santa Fe to the 15 connector. Usually traffic picks up from Barham to the 15 connector. San Marcos is planning a downtown development which means more traffic will flow on SR 78. A permanent plan needs to be developed to address the real traffic problem areas, something permanent and not temporary is what is needed.	Thank you for your comments. Short-term improvements under construction such as the replacement of the Nordahl Road bridge and auxiliary lanes in the eastbound and westbound direction will provide some relief while the long-term improvements are developed. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Online	2/28/2012
3		LaBelle	Paul	Neither alternative posted will provide a solution. What is needed is 4 general purpose lanes plus an extra lane for entering and exiting. Merging directly on the freeway, along with signal lights on ramps that do not provide sufficient space to allow vehicles to reach freeway speeds, are the major cause of traffic congestion on the highway. Toll lanes are a double tax as commuters sales tax money through TransNet already provide funding and it discriminates against working families. I am a native of the Highway 78 corridor and my family has lived here for over 45 years.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including merging analyses.	Online	2/28/2012
4		Orozco	Carmen	It would be great if we could get option #1 which is to use the new lanes as carpool lanes for free. Thanks.	Thanks for your input on the alternatives evaluated. The Managed Lane alternative (Alternative 1) will allow persons who carpool to use the new lanes for free.	Online	2/28/2012
5		Stafford	Roger	We voted for and approved a bond issue for transportation. Why would we now be subjected to a different proposal for the carpool lanes than are in place for I-15 drivers? Keep it simple and consistent.	Thanks for your input. The Managed Lane alternative (Alternative 1) will allow persons who carpool to use the new lanes for free, and would sell excess capacity to solo drivers, as is currently done on I-15.	Online	3/1/2012
6		Scott	Nadine	Alternative 1 with free lanes is highly preferred by me. I strenuously object to toll lanes. They are costly to maintain, supervise, and hurt the average person who cannot afford the tolls thereby making them not well used. I drive the 78 at various times of day but the rush hour in the pm is horrible. The other fix needs to be a redesign at the Highway 5/78 connector.	Thank you for your comments on the alternatives evaluated. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Regarding I-5/SR78, Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/1/2012
7		Staley	Erik	Please, please do something to improve the westbound 78 to southbound I-5 connector (or lack thereof). It's silly to have an intersection and traffic light in the middle of a very busy freeway interchange. I think improvement of this interchange is the #1 priority for SR 78.	Thanks for your input. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/2/2012
8		Svoboda	K.	Widening the 78 would simply add more traffic. I formerly drove it every day for a work commute. It is congested at times, but the rush hours are generally manageable.  Putting money into smoothing out the kinks in the frontage roads like Vista Way and other east-west streets seems like a better plan than expanding the 78 itself. The 78 is used a lot for local traffic going one or two exits. Making it a toll road would be a real burden for residents and other such users.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Online	3/2/2012



### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
9		Crane	Peggy	I travel to Escondido several times every month via 78. Since moving to Carlsbad in 2004, it seems like some part of this highway has been under construction constantly. It would be nice to have a finished highway where you don't have to straddle old lanes. The interchange from westbound 78 to southbound I-5 is a nightmare almost all the time. Fix it!	Thank you for your comments. Some operational improvements have been built along the corridor over the years to provide congestion relief. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/2/2012
10				The off-ramp to take 15 south when heading east on 78 needs to have an additional lane and then have barriers so that motorist exiting there do not pile up on the left side of the highway and block motorist trying to go east to Escondido.	Thank you for your comments. Comments received will be provided to Caltrans for consideration in the next stage of the project development process. This will include the PSR/PDS for the SR 78 HOV Connector which is anticipated to begin in summer 2012.	Online	3/2/2012
11			Robert	I completely support any effort to improve the flow of traffic on SR 78. I love the toll road on I-15 and would love to pay to use the same on 78. Good luck.	Thank you for your input on the alternatives evaluated.	Online	3/3/2012
12		Neff-Sinclair	Jan	I usually commute from the Jefferson exit of 78 to Palomar College, off the Las Posas exit.  I see a lot more people traveling solo than in groups, so I think toll lanes might alleviate traffic more than HOV. So would ticketing all the people talking on their cell phones while driving slow and weaving in the left lane.	Thank you for your input on the alternatives evaluated.	Online	3/3/2012
13				Don't do anything, be patient. Technology is rapidly developing allowing vehicles to be operated without a driver. No need for widened freeways and/or for bullet trains.	Thank you for your input. A No Build alternative was evaluated as part of this study and will be carried forward as the project implementation and environmental clearance processes move forward.	Online	3/3/2012
14		Brusseau	Scott	Seventy-eight needs to be wider in both directions and the on and off-ramps need to improved.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including ramps.	Online	3/4/2012
15		Feeley	Mike	The 78 from Rancho Santa Fe to the 15 needs to be expanded to 4 lanes in both directions. Unless you are going to have separate connecting bridges at the 15 for HOV, I think it would be better to just increase the lane count and add another connector lane to the 15 south.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. In addition, a PSR/PDS for the SR 78 HOV Connector is also anticipated to begin in summer 2012.	Online	3/5/2012
16				This freeway is very curvy compared to others. It makes it nice to drive, but probably slows the traffic. Straighten it out where possible, rather than add lanes. Fixing bottlenecks at either end (15 and 5) and major intersections (El Camino Real, Nordahl) is better than widening into our neighborhoods.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 and the PSR/PDS for the SR 78 HOV Connector, which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including operational improvements, and interchanges. In addition, Caltrans has a PSR in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/5/2012

### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
17		Brubaker	Joan	Highway 78 is a major corridor for the communities of Oceanside, Vista, and unfortunately for Temecula and Riverside. Many of the motorists are employed in professions in San Diego or Carlsbad and as a consequence the roadway provides a mode of travel for them to make a living. Toll roads seem to be a coming method of providing a more direct and efficient route of going to the destinations motorists are seeking. For that reason this suggestion does not surprise me at all. What happened to the funds we submit every time we buy petrol?	Thanks for your input. It is assumed that approximately 50 percent of the project cost will be funded with local TransNet funds. In addition, per the fiscal year ending June 30, 2010, the California Streets and Roads Annual Report indicates that the majority of gas tax funds were expended towards local roadways as follows; construction and right-of-way, maintenance, and engineering and administration.	Online	3/6/2012
18		Reed	Tammy	The new lanes should not be toll or HOV! Why give us only two alternatives? We are paying for them. We all pay taxes so the new lanes should be lanes every person and every vehicle can use at all times! They should not be a new stream of revenue, such as the HOV lanes on the I-15. Those lanes could have added 3-4 lanes in each direction that everyone could use. Instead solo drivers paid taxes to have it built, and then have to pay a fee to use it.	Thank you for your comments on the alternatives evaluated.	Online	3/6/2012
19				The only thing that 78 needs is more lanes for everyone. Not just car poolers or people that want to pay extra. The 78 needed more lanes right after the first expansion around 20 years ago? Just a wider freeway would be nice. And redo the transition ramps from the 78 to the 5 and 5 to 78.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Online	3/9/2012
20				Highway 78 should have been four lanes each direction last time it was expanded. The last expansion took way to many years to complete, it seemed like it was at least 10 years from start of expansion to finish.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. The SR 78 corridor is physically constrained with adjacent sensitive lands and commercial development. The SR 78 Project Study Report (PSR), which is anticipated to begin in summer 2012, will consider constraints such as limited right-of-way, sensitive environments, and commercial development. Construction phasing will be also be examined in future stages of the project development process.	Online	3/9/2012
21		Crawford	Kim	I am 100 percent against the new lanes becoming toll lanes. I think people should be rewarded for carpooling therefore the new lanes should provide the incentive to travel together not charge people for using the highway. If the new lanes would be toll lanes then the other lanes will be even more congested because people will want to pay to drive to their destination. Look at the price of gas, I think we are paying enough in taxes to drive our cars as it is. Thank you very much!	Thank you for your comments on the alternatives evaluated.	Online	3/12/2012
22		Hamilton	John	Of the two alternatives, alternative 1 seems the more likely to be successful. From my observations traveling SR 78 for over four years, there is a significant amount of traffic generated from students commuting to the various colleges (compare the ADT during peak-hour times during July and October or February!). I have noticed a number of students carpooling, so given the costs of attending college (e.g., tuition, etc.) plus the cost of commuting (e.g., gas), there would likely be more use of alternative 1, which would hopefully reduce the tremendous congestion we all face traveling SR 78.	Thank you for your comments on the alternatives evaluated.	Online	3/12/2012
23		Blum	Ken	I prefer alternative #1 as it provides an incentive for carpooling. With alternative #2 there is no reward for carpooling.	Thank you for your input on the alternatives evaluated.	Online	3/13/2012
24			Anonymous	Corridor needs more operational improvements. If an option of either express lanes or toll; express lanes would be more favorable to give dual riders that option. And for a single commuter, they may have that option to purchase a FasTrak.	Thank you for your comments on the alternatives evaluated. Short-term improvements under construction such as the replacement of the Nordahl Road bridge and auxiliary lanes in the eastbound and westbound direction will provide some relief while the long-term improvements are developed.	San Marcos Workshop Comment Card	3/14/2012
25		Sweet	Ellen	Any changes to the eastbound lanes of SR 78 between El Camino Real and College Blvd must not impact the Marron Adobe and its surrounding cultural and archaeological sites which have qualified for the National Register of Historic Places. This historic adobe has already had too many impacts on it.	Thank you for your comments. The project must comply with Section 106 of the National Historic Preservation Act and California Public Resources Code 5024. Cultural and archaeological analyses will be conducted during the environmental clearance process.	Online	3/15/2012

### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
26		Kloss	Carl	The 78 was okay in the 1980s. For 2012, it is sorely lacking and it needs 4 lanes and the interchange at the 5 should not have a signal. Fix it ASAP, please. The work at Nordahl is in the right direction. Thanks.	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. ADD CT ANALYSIS OF I-5/SR 78 IC. In addition, Caltrans has a PSR in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/15/2012
27				Please do not expand the 78. More traffic equals more pollution. As a resident who lives near the 78, expansion is bad for the community who lives here. When you plan for more cars, you are going to get more cars. How about improving public transit modes that already exist and are underutilized, such as the SPRINTER? Be creative, be resourceful, the easy "solution" is to build more lanes, instead, do something that will not harm the community.	Thank you for your comments. The SR 78 Corridor Study included double-tracking the SPRINTER corridor for both regular and express service, Rapid Bus, increased local bus service headways, and streetcar improvements consistent with the 2050 RTP. In addition, interim express bus service prior to the SPRINTER double-tracking and college transit serving major colleges were also examined.	Online	3/15/2012
28		Jungers	Mary	<p>I live one block west of the 78/I-5 interchange, on the southwest corner of Vista Way and Stewart Street. There are only 8 homes on our cul-de-sac, but every month we have over 3,000 vehicles from the freeway turning around on our street to get back to the freeway. These vehicles are trying to avoid sitting at the stop light and/or multiple daily back ups on westbound 78 to go south on I-5. This count is documented in a study done by the city of Oceanside. We have serious safety issues on our cul-de-sac due to this freeway traffic. How will this be addressed in the proposed changes?</p> <p>We also get traffic from a park and ride that has no safe, direct access to the freeway, so the drivers come onto our street to turn around...to get back to the freeway. Caltrans and the City of Oceanside are attempting to remedy this but are not optimistic. How will this be addressed in the proposed changes?</p> <p>Our family has been on this corner for 50 years and have tolerated this problem since the stop light was put in place at 78 and I-5. It's time for governing bodies to focus on this decades old problem, and address 78/I-5 before you add more lanes that put more traffic on an interchange that is already dysfunctional.</p> <p>Please direct me to the point person focusing on this section of the project.</p>	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/15/2012
29		Farrell	Sandra	In San Marcos there are too many on and off-ramps which reduce capacity of SR 78. Because the off-ramps are so numerous and so close together the far right-hand lane becomes just an extension of an off/on-ramp causing the lane adjacent to it to slow down and function as a merge lane. This in turn makes only one lane, the fast lane to the far left able to travel at freeway speeds. This situation is worst during peak traffic times and made worse by having two colleges so close together.	Thank you for your comments on the spacing of ramps. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Online	3/15/2012
30		Farrell	Sandra	The off-ramps at Las Posas and Twin Oaks Valley road heading east are especially dangerous. This is due to the fact so many cars are trying to merge on at San Marcos Blvd and Rancho Santa Fe. In addition the Las Posas intersection is a real mess. People trying to get to Palomar College back the Las Posas traffic up to Grand and the location of the SPRINTER crossing is so close to the Las Posas off-ramp and Mission that people sometimes find them selves on the tracks when the SPRINTER is approaching. Either the train or the freeway needs to move so that there is more space for this amount of traffic.	Thank you for your comments on the configuration of ramps. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Online	3/15/2012
31		Farrell	Sandra	More about the Las Posas interchange. There are areas where people don't know if they are getting on to go east or west because the eastbound off-ramp onto Grand and the eastbound on-ramp are too close together.	Thank you for your comments on the Las Posas interchange. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Online	3/15/2012

### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
32		Farrell	Sandra	With the improvements to I-15 at SR 78 cars can now travel faster and need to stop quicker heading northbound and trying to transition to the SR 78. Cars heading northbound from Valley Parkway have to fight to get out into the traffic heading north on I-15 at the same time cars are trying to beat the line up of those trying to transition from I-15 to SR 78 west. It is a mess!	Thank you for your comments on the SR 78/I-15 transitions. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 and PSR/PDS for the I-15/SR 78 HOV connectors, which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of interchanges.	Online	3/15/2012
33		Farrell	Sandra	I use many of the off and on-ramps along the SR 78 corridor and those in San Marcos are the worst.	Thank you for your comments on ramps along the corridor. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of ramps.	Online	3/15/2012
34		Garcia	Noelia	I attended the meeting at San Marcos city hall on March 14, 2012. This meeting was to improve transportation. The improvement of Route 78 is a very good thing because by doing this you guys will be minimizing the traffic congestion during the morning and afternoon for all those people trying to get home to their families. I thought it was very interesting and that it is a very good idea. Traffic is a problem and I thank you and your team for trying to make things better for everyone. I know that you guys are at the first step right now, but I know that when you guys are done with this project it is going to be very helpful to everyone that has to sit there stuck in that traffic. I thank the California Department of Transportation (Caltrans), the San Diego Association of Governments (SANDAG) and the cities of Escondido and San Marcos for working together to make this improvement for the rest of us to use. I also know that this project is fully funded through federal grants provided to the cities of Escondido and San Marcos. I thank you guys one more time because with this project you guys are going to make a lot of people's lives easier to get to and from work or where ever they are headed to.	Thank you for your input and kind words.	Letter	3/15/2012
35		Knott	James	1) No toll - Prejudice against low income seniors and families 2) Instead of widening 78 improve Vista Way and other arterials to take loads off of freeway - the freeway was done to remove loads off of these roads now most of the time few people use these roads, you can be backed up in traffic on 78 yet see cars zipping along on Vista Way 3) Consider K-rail movable HOV lanes instead of dual lanes each side and design future improvements 4) Protect historical and natural American sites like the Manor Adobe and other sites 5) Consider enhanced amenities like a greenbelt and informational signage 6) Keep electronic bill boards off the route 7) Fix 78 and Vista Way at Coast Highway Oceanside, and I-5 homeowners need your assistance 8) On Rancho Del Oro, use the College Boulevard example on/off on north side and route to College to go opposite direction	Thank you for your detailed comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Oceanside Workshop Comment Card	3/15/2012
36			Anonymous	I believe that the Route 78 project should be a priority within San Diego County. I would propose that the interchange between I-5 and Route 78 be moved up in the schedule and that this particular portion of the Route 78 corridor needs the most attention. I am in favor of alternative 1 and it is a viable project for design-build.	Thank you for your input on the alternatives evaluated. Regarding the I-5/SR 78 interchange, Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Oceanside Workshop Comment Card	3/15/2012
37			Anonymous	Propose to tackle the toll lane alternative as one, complete project. Fast track the job for completion in a 5 year window with a 25 - 30 year concession, at which point the toll lanes would revert to HOV/Express. Could be done for \$750 million or less. Design-build-operate-transfer.	Thank you for your input on the alternatives evaluated.	Oceanside Workshop Comment Card	3/15/2012
38			Sam	If you put a carpool lane in instead of widening it that would be nice.	Thank you for your input on the alternatives evaluated.	Oceanside Workshop Comment Card	3/15/2012

### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
39		McKinley	David	To increase capacity of SR 78, simply add two standard traffic lanes, one in each direction for the length of the freeway. Do not build HOV lanes or any other type of controlled access lanes. Such lanes are unsafe, expensive to build, take up more space, and are not effective at reducing cars on the road. Don't even consider lanes that solo drivers must pay to use. E-mail when the study is posted online.	Thanks for your input. The SR 78 Corridor Study focused on analysis of Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.	Oceanside Workshop Comment Card	3/15/2012
40		Bockman	Joan	Freeway 880 or 680 sorry don't remember number, between San Jose and Oakland, is full of pot holes and still they have no trouble following signs that say "carpool lane 7-9am 3-5pm" or something like that. The only change I want to see for both 78 and 5 is diamond lanes on #1 and #2 with those signs. No construction, no idiot proofing. We can do it.	Thanks for your input on the alternatives evaluated, including peak period express lanes.	Oceanside Workshop Comment Card	3/15/2012
41				Something needs to be done about the transition from the I-5 to the 78 in both directions.	Thanks for your input. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	Online	3/19/2012
42				I would like to see the Las Flores exit closed.	Thanks for your input on the Las Flores interchange. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of interchanges.	Online	3/19/2012
43		Jungers	Mary	<p>I live on the southwest corner of Vista Way and Stewart Street. All day, every day, I watch literally hundreds of vehicles abandon waiting at the interchange stop light to go south on 5 from west 78. It is documented by the City of Oceanside that our street, south Stewart Street, gets 3,000 vehicles a month, all turning around to go back to the freeway.</p> <p>There are only 8 residences on our street! But we have to handle 3,000 vehicles from the freeway!</p> <p>I just watched 13 vehicles in 8 minutes come off the interchange and turn around within the first block west of the interchange. Three of them came blazing onto our cul-de-sac, whipped around in the middle of the street and raced back to go south on 5.</p> <p>Others turned in the middle of heavy traffic on Vista Way causing near accidents, and horns to blast.</p> <p>This is in 8 minutes, at 8:15 in the morning and it does not let up....all day, every day, for decades.</p> <p>I would like to speak with someone who can offer reassurances - proof - that this problem is going to be addressed in the upcoming widening of 78. Another westbound lane means more traffic in our neighborhood unless it is handled properly. Please fix this dysfunctional interchange and take the freeway's 3,000 vehicles off of our cul-de-sac.</p> <p>Please put me in touch with whomever can help address this problem.</p>	The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of interchanges.	E-mail	3/23/2012
44		Jungers	Mary	<p>Thank you to all for your attention to this decades old problem. My family has been in this home since the early 60's and have tolerated the traffic longer than anyone should reasonably expect us to. Our entire neighborhood has been turned into one long freeway ramp.</p> <p>We acknowledge that we live on a major artery but view Vista Way as a gateway to South Oceanside, not a ramp to the 78 and 5. We know Vista Way will always carry traffic. But it should be residential traffic, not thousands of freeway drivers angry about sitting at a stop light. The fact that there are over 3000 freeway vehicles a month turning around on a 8-home cul-de-sac should be proof enough that changes are required. And that number does not reflect the majority of freeway vehicles turning in the middle of Vista Way or in the Hunter restaurant parking lot.</p>	Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.	E-mail	3/27/2012

### SR 78 Corridor Study Public Outreach - Comments and Responses

Number	Agency	Last Name	First Name	Comment	Response	Comment Format	Date
45	City of Vista			<p>We have been in the environmental clearance and design stages to widen W. Vista from its current substandard design to a 4-lane road in accordance with our adopted Circulation Element. In light of the planned SR-78 widening project and the probable impacts to adjacent frontage roads, we will only proceed with work currently authorized under the federal grant for the project (preliminary engineering, which includes final design and environmental documentation). We also have local funds programmed to construct phase 1 of the project between Emerald Drive and Grapevine Road.</p> <p>Since the proposed SR 78 widening is likely to have significant impacts on W. Vista Way and since it is a regional arterial, we would like to request that upgrading W. Vista Way to a 4-lane road be included as part of the SR-78 widening project.</p>	<p>The Corridor Study includes a planning level cost estimate for the project, which includes the cost of relocating existing frontage road facilities that would be impacted by the SR 78 widening project. The cost estimate includes replacement of frontage roads in their existing configuration, not as wider facilities. An upgraded 4 lane W. Vista Way is not currently included in the cost estimate prepared for the Study.</p> <p>Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. As this project moves into this next project development phase, there may be an opportunity to further examine the future widening of W. Vista Way as it relates to the overall SR 78 corridor project. SANDAG will be providing all materials from the Corridor Study to the Caltrans PSR project staff.</p>	E-mail	4/2/2012
46		Jungers	Mary	<p>A highway patrol officer just turned around in my drive. Of course he had to wait for 3 other vehicles to complete their turns first. When I asked him how he happened to come to our street - that we have a serious problem with freeway traffic - the officer informed me that there was no place else to turn around and as long as this is a public street in doesn't matter that 3,000+ vehicles are using it for the same reason. A model civil servant.</p> <p>Yes it is a public street but I have a right to expect the same reasonable traffic flow that other residential streets experience. That is not the case and will not be until you do something about the interchange at 78 and 5.</p> <p>And, further information - for every one car turning around on my street - at least 5 have turned around in the Hunter parking lot. Please do the math - thousands of freeway-bound vehicles in our neighborhood - continuously - for decades.....when is it our turn for improvements that will fix this problem?</p>	<p>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</p>	E-mail	4/5/2012
47		Walker	Tory	<p>I-5/SR 78 freeway connectors must be given priority over less needful (but politically driven) projects in southern parts of the County. Use some of the \$800 million that was just directed away from North County to South County</p>	<p>Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time. The 2050 RTP includes \$106 million for the I-5/SR 78 freeway connectors and \$240 million for the I-5/SR 78 HOV connectors in 2010 dollars. The SR 78/I-15 connectors are proposed to be built in an earlier phase to align with the already completed Express Lanes on I-15.</p>	Vista Chamber of Commerce Comment Card	4/5/2012
48	City of Oceanside			<p>The City of Oceanside would like to see the SR 78 eastbound off ramp at College Avenue realigned to connect into Haymar Drive opposite Plaza Drive at College Boulevard.</p>	<p>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements</p>	E-mail	5/2/2012